Barr's Buffon.

Buffon's Natural Hiſtory.

CONTAINING

A THEORY OF THE EARTH,

A GENERAL

HISTORY OF MAN,

OF THE BRUTE CREATION, AND OF

VEGETABLES, MINERALS,

&c. &c.

FROM THE FRENCH.

WITH NOTES BY THE TRANSLATOR.

IN TEN VOLUMES.

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THE SIXTH VOLUME.

Of Domeſtic Animals.

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BUFFON'S

NATURAL HISTORY.

OF DOMESTIC ANIMALS.

THE CAT.

THE cat is a faithleſs domeſtic, and only kept through neceſſity to oppoſe to another domeſtic which incommodes us ſtill more, and which we cannot drive away; for we pay no reſpect to thoſe who, being fond of all beaſts, keeps cats for amuſement. Though theſe animals are gentle and frolickſome when young, yet they even then poſſeſs an innate cunning, and perverſe diſpoſition, which age increaſes, and which education only ſerves to conceal. They

are naturally inclined to theft, and the beſt education only converts them into ſervile and flattering robbers; for they have the ſame addreſs, ſubtilty and inclination for miſchief or rapine. Like all knaves they know how to conceal their intentions, to watch, wait, and chooſe opportunities for ſeizing their prey; to fly from puniſhment, and to remain away until the danger is over and they can return with ſafety. They readily conform to the habits of ſociety, but never acquire its manners; for of attachment they have only the appearance, as may be ſeen by the obliquity of their motions and the duplicity of their looks. They never look in the face of thoſe who treat them beſt and of whom they ſeem to be the moſt fond, but either through fear, or falſehood, they approach him by windings to ſeek for thoſe careſſes they have no pleaſure in but only to flatter thoſe from whom they receive them. Very different from that faithful animal the dog, whoſe ſentiments are all directed to the perſon of his maſter, the cat appears only to feel for himſelf, only to love conditionally, only to partake of ſociety that he may abuſe it; and by this diſpoſition he has more affinity to man than the dog, who is all ſincerity.

The

The form and temperament of the cat's body perfectly correſpond with his diſpoſition. He is handſome, light, adroit, cleanly, and voluptuous; he loves eaſe, and ſearches out the ſofteſt places for reſt and repoſe. The cat is very amorous, and what is uncommon among animals, the female appears more ardent than the male; ſhe ſeeks for and invites him, and by her loud cries announces the fury of her deſires, or rather the preſſure of her wants; if he flies from or diſdains her, ſhe purſues, tears, and though their approaches are always accompanied with acute pain, ſhe forces him to comply with her deſires. This paſſion of the female continues nine or ten days, and commonly happens only twice a year, but ſometimes three and even four times. They go with young 55 or 56 days, and they uſually have from four to ſix at a litter. As the males are apt to devour their progeny, the females commonly conceal themſelves when they litter, and if ſuſpicious of a diſcovery, they carry their young ones away in their mouths, and hide them in holes or inacceſſible places. After ſuckling them a few weeks, the old one takes them mice, or ſmall birds, to accuſtom them to eat fleſh. By an unaccountable caprice, however, theſe very mothers ſo very tender

and

and careful, ſometimes become ſo cruel and unnatural, as to devour their offspring themſelves.

Young cats are gay, ſprightly, and full of frolic, and would be very good amuſement for children, if nothing was to be feared from their claws. Their play, though always light and agreeable, is never innocent, and ſoon turns into habitual miſchief. As they can only exert their talents on ſmall animals, they watch birds, mice, and rats, with the greateſt patience, which they ſeize with avidity, and without being taught, become more expert hunters than the beſt inſtructed dogs. Their diſpoſitions being naturally averſe to all reſtraint, they are incapable of a regular education; we are, nevertheleſs, told that the Greek monks of Cyprus taught cats to hunt and deſtroy the ſerpents with which that iſland was infeſted; but perhaps this hunting was more from their natural inclination to deſtroy than from obedience, for they take great delight in watching, attacking, and deſtroying all feeble animals without diſtinction, as birds, young rabbits, leverets, rats, mice, bats, moles, frogs, toads, lizards, and ſerpents. They are without docility, and their ſcent, which in the dog is ſo eminent a quality, is very indifferent, and therefore they hunt

hunt by the eye only; neither do they properly purſue, but rather lie in wait and attack the animals by ſurpriſe; and after having played with, and tormented them a long time, they kill them without any neceſſity, even when well fed and in no want of prey to ſatisfy their appetites.

The moſt immediate phyſical cauſe of their inclination to ſeize other animals by ſurpriſe, comes from the advantage they receive from the particular conformation of their eyes. The pupil in man, and many other animals, is capable of a certain degree of contraction and dilation; it enlarges a little when the light is faint, and contracts when it becomes too ſtrong; in cats and nocturnal birds, as owls, &c. this contraction and dilation is ſo conſiderable that the pupil, which in the dark is large and round, becomes in the day, long and narrow like a line; and therefore theſe animals ſee better in the night than in the day. There is a perpetnal contraction in the eye of the cat during the day, and it is only by a great effort that he can ſee in a ſtrong light, whereas, in the twilight, the pupil reſumes its natural form, he ſees perfectly, and profits from this ſuperiority to know, attack, and ſurpriſe his prey.

It cannot be ſaid that cats, though living in our houſes, are entirely domeſtic. The moſt familiar are not under any ſubjection, but rather enjoy perfect freedom, as they only do juſt what they pleaſe, and nothing is capable of retaining them in a place which they are inclined to deſert. Beſides, moſt of them are half wild, know not their maſters, frequent other granaries, and never viſit the kitchens and offices belonging to the houſe but when preſſed to it by hunger.

Cats have leſs attachment to perſons than to houſes. When taken to the diſtance of a league or two they will return to their former abode of their own accord, poſſibly becauſe they there know all the retreats of the mice, the outlets and paſſages about the houſe, and becauſe the labour of the journey back is leſs than it would be to acquire the ſame facility in a new place. They naturally diſlike water, cold, and bad ſmells; they love to be in the ſun, and to lie in warm places; they are very fond of perfumes, and willingly allow themſelves to be taken and careſſed by thoſe who make uſe of them. The ſcent of the valerian root has ſo powerful an effect on them that it appears to tranſport them with pleaſure; to preſerve this plant in the gardens it is neceſſary to ſurround

it

it with a close fence, for the cats smell it at a distance, will come about it in numbers, and by rubbing and passing and repassing over it very soon destroy the plant. They do not come to their full growth in less than fifteen or eighteen months, but they are capable of engendering before the end of the first year, and they can procreate all their lives, which seldom exceeds eight or nine years; they are notwithstanding, very lively and hardy, and more nervous than most other animals which live longer.

Cats can only chew slowly, and with difficulty; their teeth are so short, and so badly placed, that they rather serve them to tear than grind their food, and, therefore, they always give the preference to tender victuals; they are very fond of fish, which they will eat either raw or boiled; they drink frequently; their sleep is not sound, and they often assume the appearance of sleep for some artful design; they walk gently, and without making any noise. They are very cleanly, and as their coat is always dry their hair easily electrifies, and the sparks are seen to come from it merely by rubbing the hand across it in the dark. Their eyes also sparkle in the dark like diamonds,

and ſeem to reflect in the night the light they may be ſaid to have imbibed during the day.

The wild cat *(fig.* 50.*)* couples with the domeſtic one *(fig.* 51.*)* and conſequently form but one ſpecies. It is not uncommon for both males and females to quit their houſes when they are proud and go into the woods to ſeek wild cats, and afterwards return to their former habitations; it is for this reaſon that ſome of our domeſtic cats ſo entirely reſemble the wild ones. The greateſt difference between them is internally, the inteſtines of the domeſtic cat being longer than thoſe of the wild cat, although the latter is much the largeſt and ſtrongeſt; his lips are alſo always black, his ears more ſtiff, his tail larger, and his colour more uniform. In this country we know but one ſpecies of wild cat, and it appears from the teſtimony of travellers that this ſpecies is found in almoſt all climates without any great variety. There were ſome of them upon the new continent before its diſcovery: an huntſman carried one to Chriſtopher Columbus which was of the common ſize, of a dark grey colour, and had a very long ſtrong tail. There were wild ones found at Peru, but none in a tame ſtate; as alſo in Canada, in the county of Illinois, &c.

Engraved for Barr's Buffon.

FIG. 50.
Wild Cat.

FIG. 51.
Domestic Cat.

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&c. They have been ſeen in many parts of Africa, as in Guinea, and the Gold Coaſt; at Madagaſcar, where the natives had domeſtic cats, and at the Cape of Good Hope, where Kolbe ſays, there are alſo, though in a ſmall number, wild cats of a blue colour; and theſe blue, or rather ſlate-coloured cats are alſo found in Aſia. Pietro della Valle ſays, "In Perſia there are cats of a ſpecies which properly belong to the province of Charazan. Their ſize and form are like thoſe of the common cat; their beauty conſiſts in their colour, which is grey, ſpotleſs, and uniform over the whole body, except that it is darker on the back and the head, and ſhaded lighter on the breaſt and belly, until it approaches a degree of whiteneſs; which agreeable mixture, to uſe the language of the painters, forms a kind of *chiaro-obſuro* that has always a wonderful effect. Beſides, their hair is ſhining, ſoft and delicate as ſilk, and ſo long, that, though more ſmooth than rough, yet it is curled, particularly under the neck. Theſe cats are to the reſt of their ſpecies, what the water-dogs are to that of the dog. The moſt beautiful part of their body is the tail, which is very long and covered with hair of five or ſix inches in length, and which they turn up over their backs like the ſquirrel, and

the

the upper point reſembles a plume of feathers. They are very tame, and the Portugueſe have brought them from Perſia into the Indies." From this deſcription it appears, that, except in colour, theſe cats reſemble thoſe of Angora *(fig.* 52.*)* It is probable, therefore, that the cat of Chorazen, in Perſia, and the cat of Angora, in Syria, are of the ſame race, and whoſe beauty proceeds from the particular influence of the climate of Syria, in the ſame manner as the Spaniſh cats *(fig.* 53.*)* which are red, white, and black, and whoſe hair is ſoft and gloſſy, are indebted for their beauty to the climate of Spain.

In general it may be remarked, that of all the climates of the inhabited globe, thoſe of Spain and Syria are the moſt favourable to theſe beautiful varieties in nature. The ſheep, goats, dogs, cats, rabbits, &c. of thoſe countries, have the fineſt wool, the moſt beautiful and longeſt hair, and the moſt agreeable and moſt varied colours. Both hair and colours of the wild cat, like thoſe of moſt other animals, are coarſe; when tamed the former becomes more ſoft and the latter more variegated, and in the favourable climates of Chorazen and Syria, the hair becomes more long, fine, and copious, and the colours more delicate; the black and red

Engraved for Barr's Buffon.

FIG. 52.
Spanish Cat.

FIG. 53.
Angora Cat.

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red change into a tranſparent brown, and the dark brown into an aſh-coloured grey. By comparing, a wild cat of our foreſts with thoſe of Chorazen we ſhall find their greateſt difference conſiſts in this ſhaded variety of colours. As theſe animals have more or leſs white upon the belly and ſides, it is eaſy to conceive that to have cats entirely white and with long hair, ſuch as the cats of Angora, we have only to unite thoſe with the moſt white, in the ſame manner as is done with rabbits, dogs, goats, ſtags, &c. In the Spaniſh cat, which is only another variety of the wild cat, the colours, inſtead of being weakened by uniform ſhades, as in the Syrian cat, become more bright; the yellow is changed into red, the brown into black, and the grey into white. Theſe cats retain their colours, and do not degenerate when tranſported into America. "In the Antilles, ſays Father du Tertre, there are a number of cats, probably brought thither by the Spaniards; moſt of them have red, white, or black marks, and many of the French, after eating the fleſh, ſend their ſkins to France for ſale. When we came to Guadaloupe the cats were ſo accuſtomed to feed on partridges, doves, thruſhes, and ſmall birds, that they would not deign to look upon rats; but no ſooner did they

they find the game diminiſh than they broke their truce with the rats and fought them vigorouſly."

In general cats are not, like dogs, ſubject to degenerate when tranſported into warm climates. Boſman ſays, "the European cats when carried into Guinea preſerve their original figure the ſame." Their nature, is indeed, more conſtant, and as their domeſtic ſtate is neither ſo entire, univerſal, nor perhaps ſo ancient as that of the dog, it is not ſurpriſing that they ſhould have undergone leſs variation. Our domeſtic cats, though they differ in colour, do not form diſtinct and ſeparate races; the climates of Spain and Syria having alone produced varieties which are permanent. To theſe might indeed be added the climate of Pe-chi-ly, in China, where there are cats with long hair and pendant ears, and of which the Chineſe ladies are very fond. Theſe domeſtic cats with pendant ears, of which we have deſcriptions, are more removed than thoſe with ſtraight ears, from the wild primitive race.

We ſhall here cloſe the hiſtory of the cat, and with it that of domeſtic animals; of theſe our number is confined to the horſe, the aſs, the ſheep, the goat, the hog, the dog, and the cat. We add not to this liſt the camel, the elephant,

elephant, the rein-deer, and others, which though domeſtic in other countries, are not familiar to us; nor ſhall we enter upon the hiſtory of foreign animals, till we have given that of the wild animals of our own country. Beſides, as the cat may be ſaid to be only half domeſtic, he forms the ſhade between the real wild and real domeſtic animals; for among the domeſtic we ought not to include ſuch troubleſome neighbours as rats, mice, and moles, which, though inhabitants of our houſes and gardens, are not leſs wild and unſubjected; ſince inſtead of being attached or ſubſervient to man, they fly from him, and in their obſcure retreats, retain their manners, habits, and their liberties inviolate.

In the hiſtory of each domeſtic animal we have ſeen to what a degree the education, protection, and care of man, influence the diſpoſition, manners, and even the form of animals. We have ſeen that theſe cauſes, added to the effects of the climate, modify and change the ſpecies ſo as to render them very different from what they were originally, whereby there is occaſioned ſuch a diſſimilarity among the individuals of the ſame ſpecies that we ſhould be led to conſider them as different animals, did they not produce together fertile individuals,

which is the ſole eſſential characteriſtic of every ſpecies. We have ſeen that the different races of domeſtic animals obſerve nearly the ſame order in the different climates with the human race; that like men they are more ſtrong and courageous in cold countries, more civilized and mild in temperate ones, and more daſtardly, feeble, ugly, and deformed, in the hot regions; that moreover it is in temperate climates, and among the moſt civilized nations, the greateſt diverſity, mixture, and numerous varieties of each ſpecies are found; it is among them alſo that animals exhibit evident ſigns of the antiquity of their ſervitude; their pendant ears, varied colours, long and delicate hair, are ſo many effects produced by the length of time they have been in a domeſtic ſtate. Of almoſt all wild animals the ears are erect. Thoſe of the wild boar are erect and ſtiff, but thoſe of the domeſtic hog are inclined and half pendant. Among the Laplanders, the ſavages of America, the Hottentots, the Negroes, and other uncivilized people, all the dogs have erect ears; whereas in Spain, France, England, Turkey, Perſia, China, and all other civilized countries, the generality of them have ſoft and pendant ears. The ears of the tame cat are not ſo ſtiff as thoſe of the wild one; and in China, which is an empire

empire of very ancient civilization, and whoſe climate is very mild, there are cats with pendulous ears. It is for the ſame reaſon that the goat of Angora, whoſe ears are pendent, ſhould be conſidered as the animal of his ſpecies the fartheſt removed from his natural ſtate: the influence ſo evident of the climate of Syria, added to the domeſtic ſtate of theſe animals among a people civilized from great antiquity, would in proceſs of time have produced this variety, which cannot be maintained in any other climate. The goats of Angora brought forth in France, have their ears neither ſo long nor pendent as thoſe produced in Syria, and probably would, after a certain number of generations, aſſume the ears and hair of the goats of that country.

SUPPLEMENT.

IT has been ſuppoſed that I denied the cat the power of ſleeping, but this muſt entirely have ariſen from a miſconſtruction of my expreſſion; for although I was not aware of their ſleeping ſo ſoundly as I am now informed is ſometimes the caſe, yet I always

knew they ſlept in ſome degree. M. Paſumot, of the Academy of Dijon, has communicated to me a letter on this ſubject; he ſays, "Although the cat ſleeps ſeldom, it is very ſound, and might ſometimes be conſidered as a kind of lethargy. I have had at leaſt ten inſtances; a favourite cat uſed to lay upon the feet of my bed; one night I puſhed him away, but found him ſo immoveable that I conceived him to be dead. I pulled and toſſed him about for ſome time before he ſhewed any kind of life, when at laſt he began to awake, but it was even then very ſlowly. This ſound ſleep, and difficulty of awaking cats, I have often obſerved; and I am acquainted with a gentleman who has alſo been witneſs of their ſleeping in this ſound manner, and which he ſays is always at the time of great heat, or previous to ſtormy weather."

M. de Leſtrie, a merchant of Chalons, in Champagne, has remarked to me, that the breath of cats frequently exhales an odour reſembling muſk; particularly when they purr and are tranquil, or when ſuddenly alarmed and make an hiſſing noiſe, from which he inclines to conclude that there are ſome veſſels in the breaſt of a cat filled with an aromatic quality; but nothing of this nature is to be diſcovered by anatomy.

In

In my former hiſtory of this animal, I remarked there were cats in China, whoſe ears were pendent, but as this variety is not found in any other place, it is poſſibly an animal of a different ſpecies; and I am led to this ſuppoſition from there being an animal called *Sumxu*, mentioned by travellers, which they ſay they can compare to nothing but the cat, which it greatly reſembles. It is found among the Chineſe, who are extremely partial to it, both on account of its beauty, its hair being of a bright black or yellow colour, and becauſe it readily deſtroys rats.

We have alſo another variety of cats in our own climates; as there are ſome produced with pencils at their ears. M. de Save writes me word, that in November, 1773, he had a young kitten brought forth at his houſe in Paris, very like what we have deſcribed as a Spaniſh cat, with pencils at her ears, although neither of the parents had them, and that in a few months they were as large in proportion to her ſize as thoſe of a Canadian Lynx. At Madagaſcar they have tamed ſome wild cats which have twiſted tails, and are called *Saca* by the inhabitants; but they intermix with the domeſtic, and are of courſe of the ſame ſpecies. I have had the ſkin of an animal ſent me from Cayenne, which

which much reſembles a wild cat. They call it Haïra in Guiana, and the natives there eat its fleſh, which is white and palatable; I therefore ſuſpect a miſtake has been made in its name, and that it is the Taïra, a ſmall martin, of which we make mention at the latter part of this work.

CHAP. III.

OF WILD ANIMALS.

IN the Hiſtory of Man, and of Domeſtic Animals, we have ſeen Nature ſolely as ſhe is conſtrained; we have rarely ſeen her perfect, often altered and deformed, and always either ſurrounded with ſhackles or loaded with extraneous ornaments. We ſhall now behold her decked out by ſimplicity alone, but more attractive by her artleſs beauty, by her free air, by the ſprightlineſs of her movements, and by all the other attributes of true dignity and independence.

pendence. We ſhall behold her traverſing the ſurface of the earth with ſovereign ſway, proportioning her domain anong the animals, and dividing to each ſpecies its element, climate, and ſubſiſtence; we ſhall ſurvey her in the foreſts, and in the plains, dictating her ſimple but immutable laws; imprinting upon every ſpecies her indelible characters; diſpenſing her gifts with equity, and counterbalancing evil with good; we ſhall obſerve her giving to ſome ſtrength and courage accompanied with hunger and voracity; to others mildneſs, temperance, and agility, attended with fear, inquietude, and timidity; and to all liberty, with an uniformity of manners, and ardour in love, which they can eaſily ſatisfy, and is always followed by a happy fecundity.

In love and in liberty are to be found the greateſt bleſſings which Nature has to beſtow. Have thoſe animals which we call *ſavage*, becauſe they are not ſubjected to our will, need of aught more to make them happy? They nevertheleſs enjoy another bleſſing, that of living in a ſtate of equality; they are neither the ſlaves nor tyrants of each other; like man, the individual has not to dread the reſt of his ſpecies; they enjoy peace among themſelves, and are ſtrangers to war, but when brought on them by

by other animals or men. No wonder then that they ſhould ſhun the human face, ſteal from our view, live in ſolitudes remote from our habitations, employ all the reſources of their inſtinct to provide for their ſafety; and in order to exempt themſelves from the power of man, that they ſhould exert every expedient to preſerve their liberty which Nature has beſtowed on them, together with the deſire of independence.

Some animals, and they are the moſt mild, innocent, and tranquil, are contented with remaining at a certain diſtance from us, and living in our fields; others more fierce and diſtruſtful, conceal themſelves in the receſſes of the woods: others, as if they knew there was no ſafety on the ſurface of the earth, dig themſelves ſubterraneous abodes, take ſhelter in caverns, or gain the ſummits of moſt inacceſſible mountains; and others, the moſt ferocious and moſt powerful, inhabit deſerts alone, and reign like ſovereigns in thoſe burning climates, where man, as ſavage as themſelves, is unable to diſpute the empire with them.

As all beings, even the moſt independent, are ſubjected and governed by phyſical laws, and as brute animals, as well as man, experience the influences of the air and ſoil, ſo it appears, that the ſame cauſes which have ſoftened

tened and civilized the human ſpecies in our climates, have produced ſimilar effects upon all other ſpecies. The wolf, which is perhaps the moſt ferocious animal in the temperate zone, is by no means ſo terrible or cruel as the tiger, the panther, and the lion of the torrid zone; or as the white bear, the lynx, and the hyæna of the frozen zone. And this difference is not only general, as if Nature, to give a degree of harmony to her productions, had calculated the climate for the ſpecies, or the ſpecies for the climate, but in each particular ſpecies the climate is calculated for the manners, and the manners for the climate. In America, where the heat is leſs violent, and the air and ſoil more benign than in Africa, though under the ſame line, the lion, tiger, and panther, have nothing terrible in them but the name. No longer are they the tyrants of the foreſts, thoſe intrepid enemies of mankind, thoſe monſters which delight in blood and carnage: but in America theſe animals uſually run from before man, and even inſtead of waging open war againſt other animals, employ ſtratagem and artifice to take them by ſurpriſe; in a word, they may be rendered ſubſervient and almoſt domeſtic; therefore were ferocity and cruelty the characteriſtic of their natures, they muſt

have degenerated, or rather felt the influence of the climate; under a milder ſky their diſpoſitions have been ſoftened; every exceſs in them has been tempered, and by theſe changes they have become more conformable to the nature of the country which they inhabit.

The vegetables which cover this earth and are more connected with it than the animal that feeds upon them, partake in a ſuperior degree of the nature of the climate. Every country, every degree of temperature, has its particular plants. At the foot of the Alps we find thoſe of France and Italy, and on their ſummit thoſe of the northern regions, which very plants we alſo meet with on the frozen pinnacles of the African mountains. On the ſouth ſide of the mountains which ſeparate the Mogul empire from the kingdom of Caſhmire, we ſee all the plants of the Indies, and on the other ſide we are ſurpriſed to find none but thoſe of Europe. It is from intemperate climates that we alſo derive drugs, perfumes, poiſons, and all the plants whoſe qualities are exceſſive. The productions of temperate climates, on the contrary, are always mild. Of ſuch happy ſpots, herbs and roots the moſt wholeſome, the ſweeteſt fruits, the gentleſt animals, and the moſt poliſhed men, are the delightful appurtenances.

purtenances. Thus the earth produces plants, the earth and plants make animals, and of the earth, plants, and animals, is formed men; for the qualities of vegetables, proceed immediately from the ſoil and air; the temperament and other relative qualities of animals which feed on herbs, have a cloſe affinity to the particular kinds they uſe, and the phyſical qualities of men, and other animals which ſubſiſt on fleſh, as well as on vegetables, depend, though more remotely, on the ſame cauſes, whoſe influence extends even to diſpoſition and manners. Size and form, which appear to be abſolute and determined qualities, depend, nevertheleſs, like the relative qualities upon the influence of the climate. The ſize of our largeſt animals are greatly inferior to that of the elephant, rhinoceros, or hippopotamus; our largeſt birds are but ſmall if we compare them with the oſtrich, condor, or the caſſawary; and what compariſon can be made between the fiſhes, lizards, and ſerpents of our regions, and the whale, the walrus, and manati, which inhabit the northern ſeas; or the crocodiles, large lizards, and enormous adders which infeſt the ſouthern climes, both by land and water? And if we conſider each ſpecies in different climates, we ſhall find ſenſible varieties both in ſize and

figure, as we have already evinced in the hiſtory of the horſe, goat, hog, and dog. Theſe changes are, however, produced but ſlowly and imperceptibly; the grand workman of nature is Time, and his operations are equal, uniform, and regular; he performs nothing by ſtarts; nothing but by degrees and ſucceſſion; and what he does, however imperceptible at firſt, becomes gradually ſenſible, and is, at length, marked by effects which it is impoſſible to miſtake.

Wild and independent animals are, of all living beings, man not excepted, the leaſt ſubject to changes and variations of any kind. Poſſeſſed of abſolute liberty in the choice of their food and climate, their nature varies leſs than that of domeſtic animals, which we enſlave, tranſport, mal-treat, and feed without conſulting their taſte. Wild animals live uniformly in the ſame manner; they wander not from climate to climate; their native wood is a country to which they are faithfully attached, and from which they never remove but when they feel they can no longer live in it with ſecurity. When they fly it is leſs to avoid their natural enemies than the preſence of man. Nature has ſupplied them with reſources againſt other animals; with them they are on a level; they know

know their ſtrength, their cunning, their deſigns, their haunts, and if they cannot avoid they oppoſe them with force to force. But how can they guard againſt beings who can ſeize without ſeeing, and can deſtroy without approaching them? It is man, therefore, who diſturbs, and who diſperſes theſe wild animals, and renders them a thouſand times more ſavage than they would otherwiſe be, for the generality of them require nothing but tranquility, nothing but a moderate uſe of the air and earth.

By Nature they are prompted to reſide together, to unite in families, and to form a kind of ſocial intercourſe. Of this intercourſe we ſtill find veſtiges in countries not totally engroſſed by man; we there find works atchieved in common, deſigns which, without being founded on reaſon, ſeem, nevertheleſs, to be projected for rational convenience, and the execution of which ſuppoſes at leaſt an union and concurrence of individuals occupied in it. Nor is it by phyſical force or neceſſity, like the ants, the bees, &c. that the beavers labour and build; unconſtrained either by ſpace, time, or number, from choice they aſſemble. Thoſe that agree dwell together, and thoſe that diſagree live apart; and ſome, from being perpetually repulſed by the body, are obliged to lead

lead a ſolitary life. It is only in remote and deſert countries, where there is little dread of the approach of man, that they endeavour to eſtabliſh themſelves, and render their habitations more fixed and commodious, by conſtructing dwellings, or, as it were, ſmall hamlets, which not unaptly repreſent the firſt efforts and feeble labours of an infant commonwealth. In countries, on the contrary, over which mankind are diffuſed, all ſociety is loſt among animals, all induſtry ceaſes, and every art is ſuppreſſed; they relinquiſh the occupation of building, and neglect every accommodation; always preſſed by fear and neceſſity, their only ſtudy is to live, and their only employment flight and concealment; and if, as may reaſonably be ſuppoſed, the whole ſurface of the earth ſhould, in proceſs of time, be equally inhabited by the human ſpecies, in a few centuries the hiſtory of a beaver would be conſidered as a fable. The faculties and talents of animals, therefore, inſtead of encreaſing are conſtantly diminiſhing, for time may be ſaid to oppoſe them. The more the human ſpecies are multiplied and improved the more the wild animals become ſubjected to the dominion of an abſolute tyrant, who will hardly permit their individual exiſtence, deprives them of liberty, of every avenue

to

to ſociety, and deſtroys the very root of their intelligence. What they are become, or what they may become, is an inadequate indication of what they have been or might be. Who can ſay, if the human ſpecies were annihilated, to which of the animals would the ſceptre of the earth belong?

THE STAG, OR RED DEER.

THE Stag is one of thoſe mild, peaceable, and innocent animals, which ſeem created to adorn and animate the ſolitudes of the foreſt, and to occupy, remote from man, the peaceful retreats of Nature. His light and elegant form, his flexible yet nervous limbs, his grandeur, ſtrength, and ſwiftneſs, his head, rather adorned than armed with living branches, which, like the leaves of a tree, are every year renewed, ſufficiently diſtinguiſh him from the other inhabitants of the foreſt. As he is the nobleſt among

among theſe, he has been made ſubſervient to the pleaſures, and employed the leiſure of the greateſt heroes. The exerciſe of the chace may well ſucceed, or ſhould rather precede the fatigues of war. To be acquainted with the management of horſes and arms are talents equally common to the warrior and the hunter. A familiarity with addreſs, bodily exerciſe and fatigue, ſo neceſſary to ſupport courage, are found in the chace, and carried into the field of battle. Hunting is an agreeable ſchool of a neceſſary art; the only amuſement which entirely detaches diverſion from buſineſs; the only recreation that is totally unaccompanied with effeminacy, and always produces a lively pleaſure, that never ſatiates or cloys. In what manner can thoſe men be better employed who, from their ſituations, are conſtantly fatigued with company, that in hunting? Continually, as it were, beſet with a multitude, expoſed to the importunity of their demands, forced to attend to the affairs of others, to embark in matters of the greateſt concern, and, in effect, to be the more conſtrained in proportion to the elevation of their ſtations; great men would only feel the irkſome weight of grandeur, and exiſt only for others, if they did not occaſionally abſtract themſelves from a croud

croud of attendant flatterers. To enjoy themſelves in real ſocial affections, and preſerve private friendſhips, ſentiments a thouſand times more precious than all the ideas of grandeur, they have need of retirement from the buſtle of buſineſs, and what retirement can afford greater variety, or be accompanied with more animation than the chace? what exerciſe can be more beneficial to the body? what relaxation more agreeable to the mind?

To be always acting, or holding intercourſe with man, would be as fatiguing as perpetual thinking. Man is not intended by Nature for the contemplation of abſtract matters; to occupy himſelf in difficult purſuits, to lead a ſedentary life, and to make his ſtudy his centre of exiſtence, is, by no means, a natural ſituation, any more than it is to be perpetually agitated by the caprices of other men, and to be continually conſtrained to keep a guard over his looks, words, and actions. Whatever ideas we may entertain of ourſelves, it is evident that to perſonate is not to be, and that we are leſs calculated to think than to act, to reaſon than to enjoy. True pleaſure conſiſts in the unreſtrained uſe of ourſelves. Our beſt poſſeſſions are thoſe we have from Nature. It is the air and the earth, the plains and the foreſts,

that yield us true enjoyments, full of utility, and never to be exhauſted. A taſte for the chace, fiſhing, gardening, and agriculture, is, therefore, natural to all men; and in ſocieties more ſimple than ours there ſubſiſts but two orders, both relative to this mode of life; the nobles, whoſe employment is war and hunting, and the lower people, whoſe ſole office is the cultivation of the earth.

In poliſhed ſocieties, where every thing is refined and brought to perfection, to render the pleaſures of the chace more lively and delightful, and to ennoble an exerciſe which is in itſelf noble and beneficial, it has been formed into an art. The chace of the ſtag requires a ſpecies of knowledge which can only be acquired by experience; it ſuppoſes a royal aſſemblage of men, horſes, and hounds, all ſo practiſed, trained and diſciplined, as by their mutual intelligence to contribute to one end. The huntſman ought to be able to judge of the age and ſex of the animal. He ſhould be able to diſtinguiſh exactly whether the ſtag his hound has *harboured*, be a *brock*, or a ſtaggard; whether it is a young ſtag, not paſſed his ſeventh year, or an old one: the principal marks to obtain this knowledge is derived from the print of his foot, or his excrement. The foot of the ſtag

is

is better formed than that of the hind; her *leg** is larger and nearer to heel. His ſteps leave rounder impreſſions, and are farther aſunder; he walks more regularly, and brings the hind-foot exactly into the impreſſion made by the fore-foot; whereas the paces of the Hind are not only ſhorter, but her hind-foot does not ſo regularly fall into the track of her fore-foot. A ſtag of the fourth head, that is, has acquired his fourth horns are eaſily diſtinguiſhed; but it requires much experience to know the foot of a young ſtag from that of a hind. A ſtag of ſix or ſeven years is ſtill more eaſily diſtinguiſhed, for his fore-feet are much larger than his hind ones, and the older he grows the thicker, or more worn, are the ſides of his feet; the diſtance of his ſteps are alſo more regular, his hind-foot reſting always with tolerable exactneſs upon the track of his fore-foot, unleſs when they ſhed their horns, when the old ſtag is as liable to miſtake as the young ones, though in a different manner, and with a regularity unknown to the young ſtag or the hind, for they reſt the hind-foot always at the ſide of

* By the *leg* is underſtood the two bones at the lower extremity behind the foot, which leave an impreſſion upon the ground as well as the foot.

the fore-one, and never either beyond or within that reach.

In the dry ſeaſon, when the huntſman cannot judge by the footſtep, he is obliged to return upon the track of the animal, and endeavour to find his dung. To be able to determine by which requires perhaps more experience than a knowledge of the footſteps, yet without it the huntſman could not make a juſt report to the ſportſmen aſſembled. When, in conſequence of this report, the dogs are led to the ſhelter of the ſtag, the huntſman ſhould know how to animate his hound, and make him reſt upon the track of the ſtag until he be diſlodged. Inſtantly the horn is ſounded to uncouple the dogs, which the huntſman ſhould encourage both by the horn and his voice; he ſhould alſo carefully mark the footſteps of his ſtag, to diſcover if he ſhould ſtart another, and ſubſtitute him in his place; it will, in that caſe, ſometimes happen that the dogs will divide and form a double chace; when ſo the huntſmen ſhould divide alſo and recal thoſe dogs which have thus gone aſtray. The huntſmen ſhould always accompany his dogs, and continue to animate without preſſing them too hard; he ſhould alſo aſſiſt them in order to prevent their being deceived by the ſtag, who will try a number of

of artifices to elude them; he will frequently trace and retrace his own ſteps, mix with others, and endeavour to draw a young one to accompany him, and ſo put a change upon the dogs; he will then redouble his ſpeed, dart off on one ſide, or lie down upon his belly to conceal himſelf. In this caſe, when the dogs have loſt his foot, the huntſman and the hounds labour in conjunction to recover it; but if unable to hit upon his track, they conclude he is reſting within the circuit they have made; if their endeavours continue unſucceſsful, they have no other way left them than to take a view of the country, which may give them an idea of the place of his refuge. When diſcovered, and the dogs again put upon his track, they purſue with more advantage, as they perceive the ſtag is fatigued; their ardour augments in proportion as his ſtrength diminiſhes; and their perception is more lively, as the animal becomes heated; they then redouble their cries and their efforts, and though he is now more full of ſtratagems than ever, yet as his ſwiftneſs diminiſhes, his doublings and artifices become leſs effectual, and he has no other reſource but to abandon the earth which has betrayed him, and get into the water to make the dogs loſe their ſcent. The huntſmen traverſe theſe waters, and again put

put the dogs upon the track of his foot; after which he is incapable of running far, and reduced to the laſt extremity, ſtands at bay. He ſtill endeavours to defend his life, and often wounds dogs, horſes, and even huntſmen, with his horns, until one of them ham-ſtring him that he may fall, and then put him to death by a ſtroke of his hanger. They then celebrate the death of the ſtag with a flouriſh of horns, and the dogs partake of the victory by their perquiſite of his fleſh.

All ſeaſons are not alike proper for hunting the ſtag. In ſpring, when the foreſts begin to be cloathed with leaves, and the earth to be covered with verdure and flowers, their odour diminiſhes the ſcent of the hounds, and as the ſtag is then in his full ſtrength it is difficult for them to overtake him. The huntſmen alſo agree that the ſeaſon when the hinds are about to bring forth is that in which the chace is attended with the moſt difficulty; and that, at that time, the dogs will quit a fatigued ſtag, to follow any hind that gambols before them: and in like manner, at the beginning of autumn, which is the ſtag's rutting ſeaſon, the blood-hounds loſe all their ardour in hunting; the ſtrong ſcent of the rut probably renders the track leſs diſtinguiſhable, and very poſſibly the

ſcent

ſcent of all ſtags is at this ſeaſon nearly the ſame. In winter, when the ſnow lies on the ground, it is alſo improper to hunt the ſtag, as the hounds have no ſcent, and appear to follow the track rather by the ſight than the ſmell. At this ſeaſon, as the ſtags find not ſufficient food in the foreſts, they iſſue forth into the open country, and go even into incloſures and cultivated lands. They unite in herds in the month of December, and when the froſts are ſevere, they endeavour to find ſhelter by the ſide of a hill, or in a thicket, where they lie cloſe, and keep themſelves warm by means of their breath. At the end of winter they frequent the borders of the foreſts, and frequently deſtroy the riſing corn. In ſpring they ſhed their horns, which fall off ſpontaneouſly, or by a ſmall effort after entangling them with the branch of ſome tree. It is ſeldom that the horns of both ſides fall at the ſame time, there uſually being an interval of a day or two between them. The old ſtags ſhed their horns firſt, which happens about the end of February, or beginning of March; thoſe in the ſeventh year in the middle of March; thoſe in the ſixth year, the beginning of April; the young ſtags, thoſe from three to five years old, the beginning, and the prickets not till the middle, or latter end of May.

May. But in all this there is much variety, for old ſtags ſometimes ſhed their horns later than thoſe which are young; beſides they are more forward in caſting their horns when the winter has been mild, than when ſevere and of a long continuance.

After the ſtags have caſt their horns they ſeparate, the young ones only keeping together. They remain no longer in deep covert, but ſeek the beautiful part of the country, and continue among the coppices during the ſummer, and until their antlers are renewed. In this ſeaſon they carry their heads low for fear of rubbing their horns againſt the branches, for they are very tender until they arrive at perfection. The horns of the eldeſt ſtags are not more than half renewed by the middle of May, nor acquire their full growth and hardneſs before the end of July; the younger ſtags are later both in ſhedding and having them renewed; but when completely lengthened and hardened, they rub them againſt the trees to clear them from a ſcurf with which they are covered, and as they continue this practice for ſeveral days ſucceſſively, it has been ſaid their horns receive a tint from the juices of the trees againſt which they rubbed; that they derive a red caſt from the beech and birch, a brown one from

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FIG. 54.

Stag.

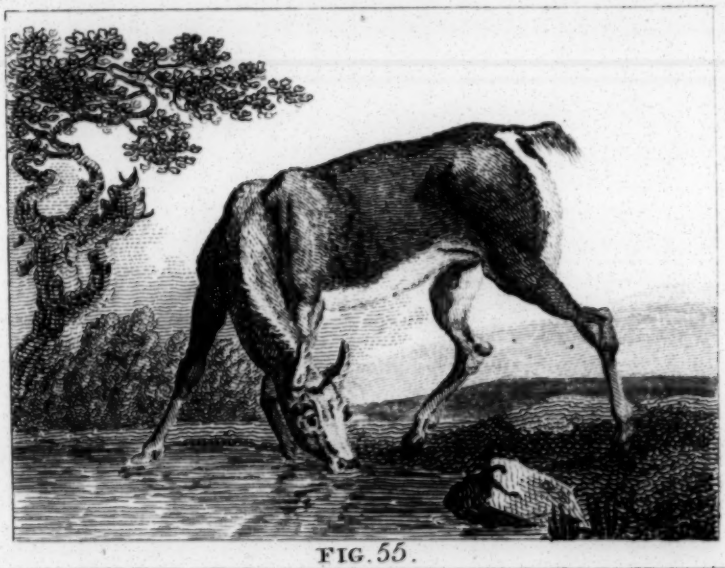

FIG. 55.

Hind.

from the oak, and a black one from the elm, or trembling poplars. It is alſo aſſerted that the horns of the young ſtags, which are ſmoother and unpearled, are not ſo much tinged as thoſe of the old ones, which are rougher, and covered with theſe pearlings, which retain the ſap of the tree. But I cannot be perſuaded that this is the true cauſe, for I have had tame ſtags ſhut up in incloſures, where there were not a ſingle tree, whoſe horns were, nevertheleſs, coloured in the ſame manner as thoſe of other ſtags.

Soon after the ſtag (*fig.* 54.) has poliſhed his horns, he begins to feel an inclination for the females, and in which reſpect the oldeſt are moſt forward. By the end of Auguſt, or beginning of September, they leave the coppice, return to the foreſt, and begin to ſearch out for favourite hinds; (*fig.* 55.) they cry with a loud voice, their necks and throats ſwell, they grow reſtleſs, and traverſe the fallow grounds and plains in open day, and they dart their horns againſt the trees and hedges; in a word they ſeem tranſported with fury, and range from place to place till they have found their females, whom they then have to purſue and overcome, as the hind flies from him, and never becomes ſubſervient to his paſſion until ſhe is ſubdued by fatigue: thoſe hinds which

are moſt advanced in years are firſt in ſeaſon. If two ſtags approach the ſame hind a combat muſt precede the enjoyment; if their ſtrength is nearly equal, they threaten, plough up the earth with their paws, make a terrible noiſe, and dart upon each other with the utmoſt fury; carry on their battles to ſuch extremities that they often inflict mortal wounds with their horns; nor is the combat ever concluded but by the defeat or flight of one of them. The conqueror loſes not an inſtant to enjoy the fruits of his victory, unleſs another male happens to appear, when he is again obliged to quit his mate, and put him to flight as he had done the other. The oldeſt ſtags are ſure to gain the battle, becauſe they are more fierce and ſtronger than the young ones, who are obliged to wait patiently until their ſeniors are ſatisfied and quit the hind; though ſometimes indeed, they take the advantage while the two old ones are fighting, and then make a precipitate retreat. The hinds alſo prefer the old ſtags, not merely becauſe they are the moſt valiant, but becauſe they are more ardent. They are alſo the moſt inconſtant, and commonly have ſeveral females at the ſame time; and when they happen to have but one, they remain attached to her but a very few days,

when

when they go in ſearch of a ſecond, with whom they remain a ſtill ſhorter time, and then wander from female to female until they are quite exhauſted. This amorous fury, however, laſts not above three weeks, during which time they eat but little, and are ſtrangers to all repoſe; night and day are they on foot, ranging about, fighting with the males, or enjoying the females, and of courſe, when the rutting ſeaſon is over, they are ſo waſted, meagre, and fatigued, that they require a length of time to recover their ſtrength. They then retire to the borders of the foreſts and graze on the beſt cultivated lands, where they find food in abundance, and where they continue until their ſtrength is reſtored.

The rutting time among the old ſtags commences about the firſt and concludes about the 20th of September; with thoſe in the ſixth or ſeventh year it begins in the middle of September, and ends the beginning of October; with the young ſtags it begins about the 20th of September and laſts to the 15th of October, by the end of which month the rutting is all over, except among the prickets, who, as well as the young hinds, are the lateſt in coming in ſeaſon; thus by the beginning of November the rutting time is entirely finiſhed; and at

that time the ſtags, being in their weakeſt ſtate, are moſt eaſily hunted down. In thoſe ſeaſons when acorns are plentiful they recover in a very ſhort time, and a ſecond rut will take place towards the end of October, but this is always of a much ſhorter duration than the firſt. In warmer climates, as the ſeaſons are more forward, ſo is the rutting time, Ariſtotle has told us that in Greece it commences at the beginning of Auguſt, and concludes towards the end of September. The hinds carry their young eight months and a few days, and ſeldom produce more than one fawn; they bring forth in May or the beginning of June; they take the greateſt care to conceal their fawns, and will even preſent themſelves to be chaced, in order to draw off the dogs, and afterwards return to take care of their young. All hinds are not prolific, and ſome of them are even barren: theſe kinds are more groſs and fatter than the others, and are ſooner in heat. It is alſo ſaid that ſome hinds have horns like the ſtags, and this is not void of probability. The fawns are not ſo called after the ſixth month, then the knobs begin to appear, and they take the name of knobbers, which they bear until their horns lengthen into ſpears, and then they are called brocks, or prickets.

prickets. Though they grow very faſt, they do not quit their mothers all the firſt ſummer. In winter they all reſort together, and their herds are more numerous as the ſeaſon is more ſevere; in the ſpring they divide; the hinds retiring to bring forth, and it is only the prickets and young ſtags which then keep together. In general the ſtags are inclined to aſſociate, and it is only from fear or neceſſity that they are ever found diſperſed. At 18 months the ſtags are capable of engendering, for thoſe brought forth in the ſpring of the preceding year will couple with the hinds in autumn, and it is to be preſumed that ſuch copulations are prolific. If any thing can create a doubt on this ſubject, it is that the ſtags have not then attained more than half their growth, for they continue increaſing in ſize till their eighth year, and to that period their horns continue to augment. But it is to be obſerved that the young fawn gains ſtrength in a little time, that his growth is very quick, both in the firſt and ſecond years, and that it has already a redundance of nouriſhment, becauſe it ſhoots forth its knobs, which are certain indications of its ability to engender. Animals in general, it is true, are not in a condition to procreate till they have nearly acquired their full growth; but

but thoſe which have certain times allotted for copulation, or ſpawning, ſeem to be an exception to this rule: fiſhes ſpawn and produce young before they have attained a fourth, or even an eighth of their full growth, and among quadrupeds, ſuch as the ſtag, elk, fallow-deer, &c. the period for rutting is exactly marked, and they copulate ſooner than other animals.

There are ſo many affinities between the nutrition, the production of the horns, the rutting, and the generation of theſe animals, that, for the better conception of the particular effects that flow from them, it is neceſſary to renumerate a few of the general principles on reproduction. Generation depends ſolely on the redundancy of nouriſhment; in infancy, when the growth is quickeſt, the nouriſhment is entirely employed in the extenſion and expanſion of the body; at that period, therefore, there is no ſuperabundance, conſequently no production or ſecretion of the ſeminal fluid, of courſe young animals are not in a condition to engender; but when their growth is nearly acquired, the redundancy begins to manifeſt itſelf by new productions. In the human race, the beard, hair, increaſe of the breaſts, and organs of generation, appear at the age of puberty. In the brute creation, and particularly the

the ſtag, the redundancy manifeſts effects ſtill more ſenſible, as the ſhooting of the horns, the ſwelling of the neck and throat, the rutting, &c. and as the ſtag is very quick at firſt in his growth, a year does not paſs before this redundance ſhews itſelf, by the appearance of his horns. If brought forth in May the horns begin to appear in the May following, and they continue to increaſe to the end of Auguſt, by which time they are full grown, and ſo hard that he rubs them againſt the trees to clear them of the ſcurf; the fat alſo at this time begins to accumulate, is determined towards the parts of generation, and excites in the ſtag that ardour and deſire which renders him ſo furious. That the production of horns, and power for generation, proceed from the ſame cauſe is evident, for by caſtration the growth of the horns is likewiſe prevented; for if this operation is performed after he has ſhed his horns they will never be renewed, and if done when they are perfect he will never ſhed them again; in effect he will remain all the reſt of his life in the ſame ſtate as when he ſuffered caſtration; and as he no longer experiences the ardour of the rut, ſo the accompanying ſigns alſo diſappear, and he becomes a tame and peaceable animal. From hence it appears

that

that the retrenched parts were neceſſary for collecting and diffuſing them over his whole body in the form of fat, particularly at the top of the head where it gives riſe to the horns. It is true, indeed, that caſtrated ſtags become fat, but the production of their horns ceaſes, their necks and throats never ſwell, and their fat is very different from that of the perfect ſtag, which in the rutting ſeaſon is ſo very ſtrong as not only to render the fleſh uneatable but offenſive to the ſmell, and will corrupt in a very ſhort time, while that of the former may be long preſerved ſweet, and eaten at all times. Another proof that the horns are produced by a redundance of the nutritive juices may be drawn from the circumſtance, that thoſe of ſtags of the ſame age will be either thick or thin, in proportion to the ſupply of food; for the ſtag which lives in a plentiful country, where he feeds at his pleaſure, and reſts at his eaſe, undiſturbed by dogs or men, will always have much larger and more beautiful antlers than he who has ſcanty ſubſiſtence, and diſturbed in his repoſe; inſomuch that it is eaſy to determine by the horns of a ſtag whether he has inhabited a rich and quiet country. Thoſe alſo which are in bad health, have been wounded, or frequently diſturbed by hunting,

have

have ſeldom fine horns or good fleſh; they are later in beginning to rut, and their horns are neither ſhed nor renewed ſo early as others. Thus every circumſtance concurs to prove, that the horns, like the ſeminal fluid, are merely the redundant ſuperfluity of the organic juices which cannot be employed in developing and ſupporting the animal body.

It is the inſufficiency of food, therefore, that retards the growth of the horns and diminiſhes their ſize; and perhaps it would not be impoſſible greatly to prevent their growth entirely without having recourſe to caſtration. It is certain that caſtrated ſtags eat leſs than others; and the reaſon the females of this ſpecies, as well as the fallow-deer, the roe, and the elk, have no horns, is becauſe they eat leſs than the males, and becauſe at the very time the redundance would naturally happen, and appear externally, they are with young, and conſequently the ſuperfluous juices are firſt employed in nouriſhing the fœtus and afterwards in producing milk for the fawn. The objection that the female rein-deer is furniſhed with horns rather ſupports what is here advanced; for of all quadrupeds which have horns, the rein-deer has by much the largeſt in proportion to his ſize, as they frequently extend the whole length of

his body; he alſo abounds more in fat, and thoſe of the females are very ſmall comparatively with thoſe of the male; the inſtance therefore only ſerves to prove, that when the redundancy exceeds what can be exhauſted by geſtation, it diffuſes itſelf outwardly in the ſame manner as that of the males. Theſe remarks, reſpecting nouriſhment, are not, however, to be extended to the quantity of proviſions, but ſolely to the organic molecules which they contain; the latter being that active and prolific matter which ſupports animated beings, and the latter a dead maſs which has no effect upon the body of the animal; and as the *lichen rangiferinus*, a kind of maſs that is the ordinary food of the rein-deer, is more ſubſtantial nutriment than the leaves, bark, or buds of trees, on which the common ſtag feeds, it is not wonderful that the former ſhould have a greater redundance of organic particles, and conſequently more fat and larger horns than the latter. It muſt be allowed, however, that organic matter, which produces theſe horns, is not entirely ſeparated from inanimate particles, but preſerves even after it has paſſed through the body of the animal, characteriſtics of its former vegetable ſtate. The horns of the ſtag in their make and growth reſemble the branches of a tree; and its

its ſubſtance is perhaps more of the nature of wood than bone; it is, as it were, a vegetable grafted upon animal, partaking of the nature of both, and forms one of thoſe ſhades by which nature always approximates to the two extremes.

In animals the bones grow at the two extremities at the ſame time, at firſt becomes hard in the middle, and at the two ends continue ſoft and receding therefrom until it has acquired its full length. In vegetables, on the contrary, the wood advances by one extremity only; the bud which unfolds to form a branch is only attached to the old wood by its lower end, and it is from this point that it exerts its power of extenſion in length. This remarkable difference between the growth of bones and the ſolid parts of plants, does not take place in the horns of the ſtag, as nothing can bear a ſtronger reſemblance to their growth than that of a branch of a tree; they extend from one extremity only, they are at firſt as tender as an herb and then harden like wood. The ſcurf which covers and grows with them is their bark, which the animals rub off when arrived at their full growth; until this is completed the ends remain ſoft, and likewiſe divide themſelves into a number of branches. In a word there is a

perfect

perfect reſemblance in the developement of both, and therefore the organic molecules, which conſtitute the living ſubſtance of the horns of the ſtag, ſtill retain the image of the vegetable, becauſe they are arranged in the ſame manner as in vegetables. Here we ſee that matter has an influence over form. The ſtag, which lives in the foreſt, and feeds only on the leaves of trees, receives from them ſo ſtrong an impreſſion that he produces a ſort of tree, of whoſe origin it is impoſſible to miſtake. This effect, though ſurpriſing, is not ſingular, but depends on that general cauſe which we more than once have already had occaſion to point out.

The moſt conſtant and invariable thing in Nature is the image or model allotted to each particular ſpecies, both in animals and vegetables; what is moſt variable is the ſubſtance of which they are compoſed. Matter, in general, ſeems to receive all forms with indifference, and to be capable of all configurations; the organic and living particles of this matter paſs from vegetables into animals, without ſuffering diſſolution or alteration, and equally form the living ſubſtance of herbs, trees, fleſh, or bones. It may ſeem from this firſt glance that matter can never predominate over form,

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and that no ſort of nouriſhment taken by the animal, provided he can draw out the organic particles, and aſſimilate them to himſelf by nutrition, can occaſion any change upon his form, and can have no effect but that of ſupporting, or adding to the growth of his body. Of this we have a proof in thoſe animals which live ſolely upon herbage, who, though a ſubſtance widely different from their own bodies, draw from it every thing neceſſary to conſtitute fleſh and blood, and will even exceed in bulk thoſe who feed upon animal food. In taking a more particular view of Nature we find this is not always the caſe. Height, for example, which is one of the attributes of form, varies in every ſpecies according to the difference of climate; as do the quantity and quality of the fleſh, two other attributes of form, according to the different kinds of food. The organic matter which the animal aſſimilates to its body by nutrition, is not, therefore, abſolutely indifferent to his modification, nor deprived of its original figure; it continues to act in its own form, and though this action be almoſt imperceptible, yet, in proceſs of time, it neceſſarily produces very ſenſible effects. The ſtag, who inhabits the foreſts, and lives only upon wood, produces a ſpecies of trees,

which

which is nothing more than the ſuperabundant part of his food. The beaver which inhabits the water, and feeds upon fiſh, has a tail covered with ſcales; and the fleſh of the other, as well as of moſt aquatic fowls, is of a fiſhy nature. It may then be preſumed, that animals which live conſtantly upon one kind of food will, in time, imbibe a tincture of its aliment; and however ſtrong the original impreſſion of nature may be, a kind of transformation will take place, by an aſſimilation contrary to the firſt. In this caſe the nouriſhment no longer aſſimilates entirely to the form of the animal, but partly to the form of the nouriſhment, as is ſeen in the horns of the ſtag and the tail of the beaver.

The horns, then, are but an excreſcence, a part foreign to the body of the ſtag, and only eſteemed as an animal ſubſtance becauſe it grows from him; it is in reality a vegetable production, ſince it retains all the marks of that vegetable from which it derives its origin, and reſembles the branch of a tree in the manner it grows, expands, hardens, dries, and ſeparates; for it falls off ſpontaneouſly, after having acquired its full degree of ſolidity, like a ripe fruit from the branch. The very name given to this production in the French lan-

guage

guage* is a proof it has been conſidered as a ſpecies of wood, and not as a horn, a bone, a tuſk, a tooth, &c. In addition to theſe arguments, we may add a fact recorded by Ariſtotle, Theophraſtus, and Pliny, who all aſſert that ivy has been ſeen to grow round the horns of ſtags while they were in a tender ſtate. If this be true, and it would be eaſy to make the experiment, it would ſtill more fully eſtabliſh the analogy between the wood of the ſtag and that of trees. The horns and tuſks of other animals are not only of a ſubſtance different from the branches of a ſtag, but alſo in their growth, texture, and form, both exterior and interior, there is nothing which bears any analogy to wood: theſe and the nails, claws, hair, feathers, ſcales, &c. grow, it is true, by a kind of vegetation, but a vegetation widely different from that of trees. The horns of oxen, goats, antelopes, &c. are hollow within, whereas thoſe of the ſtag are entirely ſolid; the ſubſtance of the former is the ſame with that of nails, claws, ſcales, &c. but the horns of the ſtag reſemble wood more than any other ſubſtance. All theſe hollow horns are covered on the inſide by a *perioſteum*, and contain

* The French word is *bois*, a foreſt, a wood, likewiſe uſed for the ſubſtance, or branch of a tree.

contain in their cavities a bone, which ſerves to ſupport them; they never fall off, but continue to increaſe during the life of the animal, and will aſſiſt in determining its age, by the number of annual rings. Inſtead of growing like thoſe of the ſtag, from the upper extremity, like nails, feathers, and hair, they grow from the lower end, extending upwards. Thus it is alſo with the tuſks of the elephant, ſea-cow, the boar, and all other animals; they are hollow within, and grow only from the lower extremity. Theſe horns or tuſks have therefore no more reſemblance than nails, hairs, or feathers, to the horns of the ſtag.

Vegetation is reducible to three kinds, the firſt is, when the growth proceeds from the ſuperior extremity, as in herbs, plants, trees, and the antlers of ſtags; the ſecond, when it is made from the inferior extremity, as in horns, claws, nails, hair, ſcales, tuſks, teeth, feathers, and other exterior parts of animal bodies; the third, when the growth advances from both extremities at the ſame time, as in bones, cartilages, muſcles, tendons, and other internal parts of animals. Of all three the material cauſe is the ſuperabundance of organic nouriſhment, and the only effect, the aſſimilation of that nouriſhment to the mould wherein it

it has been received. Thus the animal grows more or leſs quickly in proportion to the quantity of ſuch nouriſhment, and when the growth is nearly completed, it then ſeeks to employ itſelf in the propagation of new organized beings in the manner as we have before ſtated. The difference between animals, which, like the ſtag, have fixed ſeaſons, and thoſe which can engender at all times, proceeds likewiſe from the manner of their feeding. Man and domeſtic animals, which every day receive an equal quantity of ſuſtenance, and frequently to an exceſs, may engender at all ſeaſons. The ſtag, and moſt wild animals, on the contrary, who ſuffer much from want in the winter, have no ſuperabundance, nor are in a ſtate to engender till they have recruited themſelves during the ſummer; and it is then the rutting ſeaſon commences, and during which he exhauſts himſelf ſo much that he remains the whole winter in a ſtate of languor. His fleſh and blood are then ſo impoveriſhed that worms breed under his ſkin, which ſtill adds to his miſery, and which do not periſh till the ſpring, when he recovers new life from the active nouriſhment he is abundantly furniſhed with by the freſh productions of the earth.

Thus does this animal pafs his whole life in alternate plenty and want, vigour and inanition, health and ficknefs, without having his conftitution much affected by the violence of thofe extremes; nor is the duration of his life inferior to thofe animals which are not fubject to fuch viciffitudes. As he is five or fix years in growing, fo he lives feven times that number, or from 35 to 40 years. What has been reported of the prodigious longevity of the ftag has no foundation, being only a popular prejudice, which took place in the days of Ariftotle, and which he did not confider as probable, becaufe neither the time of geftation or growth, indicated long life. Notwithftanding this authority, which ought to have abolifhed the prejudice, it was again renewed in the days of ignorance, and fupported by the ftory of a ftag which was taken by Charles VI. in the foreft of Senlis, with a collar upon his neck, bearing the infcription "*Cæfar hoc me donavit*;" and the people rather chooſe to believe this ftag had lived a thoufand years, and had received his collar from a Roman Emperor, than that he came from Germany, where the Emperors now aſſume the name of Cæfar.

The

The horns of the ſtag increaſe in bulk and height from the ſecond year to the eighth, and from that time remain with equal beauty during all the vigour of life; but when he begins to decline with age they decline alſo. It is ſeldom our ſtags have more than 20 or 22 antlers, and even this number is by no means conſtant, but he will have a greater number one year than another, according to the nouriſhment and repoſe he has enjoyed; and upon the ſame circumſtances the ſize and quality of the horns likewiſe depend. It is like the wood of the foreſt, large, tender, and light, in moiſt and fertile countries, and ſhort, hard, and heavy in ſuch as are dry and barren. The ſize and ſhape of the animals alſo vary according to the diſtricts they inhabit. Thoſe which range in vallies, or gently-riſing hills, which abound in grain, are much larger than thoſe which frequent dry and rocky mountains; the latter are ſhort and thick; they are not ſo ſwift as the former, but can run much longer; they are likewiſe more miſchievous; their horns are ſhort and black, like a tree ſtinted in its growth, whoſe bark is always of a darkiſh hue; whereas the horns of thoſe which feed on plains are lofty, and of a clear red, like the wood and bark of trees which grow in a good

ſoil. Theſe little thick ſtags generally inhabit among the underwood, where they can the more eaſily conceal themſelves from the purſuit of the dogs. The ſtags of Corſica appear to be the ſmalleſt of theſe mountain-ſtags, and are hardly more than half the ſize of thoſe common among us, and are, as it were, the terrier among ſtags; his body is ſquat, his legs are ſhort, and his hair is dark brown. I am convinced that the ſize and ſtature of ſtags depend upon the quality and quantity of their food, by having reared one, and ſupplied him very plentifully, and who at the end of four years was taller, plumper, and in every reſpect better furniſhed than the oldeſt ſtags in my woods, though they are of a very large ſize.

The moſt common colour of the ſtag is yellow, though many of them are brown, and ſome red. White ſtags are more uncommon, and ſeem to be a race which have become domeſtic, but from very ancient date, as both Ariſtotle and Pliny mention them, though as very rare. The colour of the horns, as well as the hair, ſeems to depend on the nature and age of the animal, and the impreſſion of the air. The horns of the young ſtags are more white and untinged than thoſe of the old

old ones. Thoſe ſtags whoſe hair is a light yellow have often ſallow coloured horns; thoſe of a lively yellow their horns are red, and brown ones, eſpecia ly thoſe which have black hair on their necks, have black horns. It is true that the interior parts of the horns of all ſtags are almoſt equally white, but they differ greatly in point of ſolidity and texture. Some of them are even ſpongy and in which there appear large cavities. The difference of texture is ſufficient to account for their difference in colour, without having reſource to the ſap of trees as productive of that effect; eſpecially ſince we daily ſee the whiteſt ivory changes brown or yellow if expoſed to the air, although its ſubſtance is more complete than that of the horns of the ſtag.

The ſtag ſeems to have good eyes, an exquiſite ſmell, and excellent ears. When liſtening he raiſes his head, pricks up his ears, and then hears from a great diſtance; when going into or iſſuing from a coppice, or half-covered place, he ſtops to take a full view round him, and ſcents the wind by way of diſcovering whether any thing is near that is likely to give him diſturbance. Though rather ſimple he has curioſity and cunning. If any one whiſtles or calls to him from a diſtance, he ſtops ſhort, gazes

gazes attentively, and with a kind of admiration; and if thoſe who diſturbed him have neither arms nor dogs, he paſſes along quietly and without altering his pace. With equal tranquility and delight he appears to liſten to the ſhepherd's pipe, and the hunters to embolden them ſometimes make uſe of thoſe inſtruments. In general he fears men much leſs than dogs, and entertains neither diſtruſt nor artifice but in proportion as he is diſturbed. He eats ſlow, ſelects his food, and when full he ſeeks out a place to lie down and ruminate at leiſure; though he does not ſeem to perform the act of rumination with the ſame eaſe as the ox, and it is not without violence that he can make the food riſe from his firſt ſtomach; this ariſes from the length and direction of the paſſage through which the aliment has to paſs. The ox has a ſtraight, ſhort neck, but that of the ſtag is long and arched, and therefore efforts are neceſſary to raiſe the food, and which efforts are made by a kind of hiccough, the action of which is manifeſt as long as he continues to ruminate. As he advances in age his voice is more ſtrong and tremulous: that of the hind is weaker and ſhorter and ſhe never exerts it from love but through fear. The ſtag raiſes a frightful cry in rutting time, when he is ſo tranſported

that

that nothing diſquiets or terrifies him; he is therefore eaſily ſurpriſed, and being loaded with fat cannot long maintain the chace; but when reduced to an extremity he is dangerous and will attack the dogs with a kind of fury. He ſeldom drinks in the winter and not at all in the ſpring, the dew with which the tender graſs is ſurcharged being then ſufficient; but in the heat of ſummer, he has recourſe to brooks, marſhes and fountains, and in rutting time he is ſo overheated that he ſearches every where for water, not only to appeaſe his immoderate thirſt, but to bathe himſelf and to refreſh his body. He ſwims then much better than at any other time becauſe of his fat which is ſpecifically lighter than an equal quantity of water. He has been ſeen to croſs large rivers; it has even been aſſerted that allured by the ſcent of the hinds in rutting time, ſtags will throw themſelves into the ſea, and paſs from one iſland to another at the diſtance of ſeveral leagues. They leap ſtill better than they ſwim, for when purſued they eaſily clear a fence or hedge of ſix feet high. Their aliment differs according to the ſeaſons: In autumn, after the rutting ſeaſon, they ſearch out the buds of green ſhrubs, the flowers of the heath, brambles, &c. in the winter, during ſnow, they peal the bark

off

off the trees, and feed upon that and the moſs, &c. and in mild weather he ranges for provender among the corn fields. In the ſpring they ſeek out the trembling poplar, willow, hazel, &c. In ſummer, when they have abundance, they ſeem to like no grain ſo well as rye, and no wood equal to the black-berry, bearing alder.

The fleſh of the fawn is very delicate, that of the hind and pricket not bad, but that of the full-grown ſtag has always a ſtrong and diſagreeable taſte. The ſkin and the horns are the moſt uſeful parts of this animal; from the former is made a very pliable and durable leather. The horns are uſed by cutlers, and other mechanics, and a volatile ſalt, much uſed in medicine, is drawn from it by chymiſts.

SUPPLEMENT.

BY a letter I received from M. Beccaria, a celebrated Profeſſor at Piſa, dated October 28, 1767, it appears the pupil of the eye of the ſtag, as well as that of the cat, owl, &c. contracts in the light, and dilates in the dark; of this he was perfectly convinced by ſome experiments he made with a ſtag confined in a darkened

darkened apartment, but he found the effect was very different from that in the animals above-mentioned, for their contraction and dilation is made vertically, while thoſe of the ſtag are horizontally.

I have alſo received information of a fact from M. le Marquis d'Amazaga that merits being noticed in the hiſtory of the ſtag. We have already obſerved that their horns begin to acquire the form and exiſtence, which they retain for the remainder of the year, at the beginning of Auguſt, and after noticing this fact he proceeds in the relation, that on the 17th of October the attendants of the Prince of Condé chaced a ſix year old ſtag, and it being the rutting ſeaſon they were greatly ſurpriſed at the ſwiftneſs of his pace and the diſtance he led them, which was full ſix leagues from his harbour; and this ſurpriſe received no ſmall addition when he was taken, by his horns appearing white and ſprinkled with blood, as they are at the ſeaſon when they rub them againſt the trees; and it was evident, on his being opened, from the ſituation of his interior parts, that he had never experienced the effects of the rut, and as he had not been in a condition for rutting he was as loaded with fat as though it had been the month of June, July,

or Auguſt. Beſides this, he had another ſingularity; his right foot wanted the middle bone, and which in the left was at leaſt half an inch long, large, and pointed. As the ſtag, if he is caſtrated when he has no horns, never acquires any after, or never loſes them if performed when his horns are in perfection, it is but reaſonable to ſuppoſe that they were retarded, in the preſent inſtance, from the imbecility of his organs, but which however were ſufficient to effect the fall and renewal of his horns, as it was evident when he was killed that he had had horns annually from the ſecond to the ſixth year." Theſe obſervations ſtrongly prove the juſtneſs of our former remarks upon the renovation of the horns of the ſtag.

In remarking on the Norwegian ſtags, Pontoppidan ſays, "they are only in the dioceſes of Bergan and Drontheim, and that they have been ſeen to ſwim in numbers acroſs the ſtraits, from the continent to the adjacent iſlands, reſting their heads upon each other's cruppers, and when thoſe who lead are fatigued they retire behind, and the moſt vigorous take their places."

Some attempts have been made to render our ſtags domeſtic, by treating them with the ſame gentleneſs as the Laplanders do their rein-

rein-deer; upon which ſubject M. le Vicomte de Querhoënt has informed me of the following fact: "The Portugueze firſt brought ſtags to the Iſle of France, and although they took their origin from thoſe of Europe they were ſmall and their colour grey; there were great numbers of them upon the iſland when the French took poſſeſſion of it; they deſtroyed numbers of them, but a great many ſecured themſelves in the moſt retired places; theſe by degrees have become quite domeſtic, and ſome of the inhabitants keep them in large flocks."

There is a ſmall kind of ſtag at l'Ecole Veterinaire, which I have ſeen, and which is ſaid to have come from the Cape of Good Hope. It was ſpotted with white, ſomewhat like the axis, and was called the hog ſtag, merely, as it ſhould ſeem, becauſe its legs were ſhorter, and it was not ſo agile as the common kind. This was only in length, from the muzzle to the extremity of the body, three feet four inches; its legs were ſhort, and its feet and hoofs ſmall; it was yellow with white ſpots, black eyes, and black hair on the upper eyelid; the noſtrils were alſo black, as were the corners of the mouth; the head was nearly of the ſame colour as the belly, and it had large ears, white on the in and yellow on the

outſide. Its horns were above eleven inches long and ten lines thick. Its back was dark brown, its tail was yellow above and white beneath, and its legs were of a browniſh black. From all which it appears this animal approaches nearer to the ſpecies of the ſtag than to the fallow-deer.

THE FALLOW-DEER.

NO two animals can make a more near approach to each other than the ſtag and the fallow-deer, and yet no two animals keep more diſtinct, or avoid each other with more fixed animoſity; they never herd or intermix together, and conſequently never give riſe to an intermediate race. Is is even rare, unleſs they have been tranſported thither, to find fallow-deer in a country where ſtags are numerous. They ſeem to be of a nature leſs robuſt and leſs ruſtic than the ſtag; are leſs common

FIG. 56

Female Fallow Deer.

FIG 57

Fallow Deer.

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common in the foreſts, but are kept in parks, where it may be ſaid they are half domeſtic. They abound more in England than in any other country in Europe; and there the people are extremely partial to their veniſon. The dogs alſo prefer the fleſh of this deer to that of all other animals; and when once having taſted it they will quit the chace of the ſtag or roe when they come acroſs the track of a fallow-deer. There are ſome of them in the neighbourhood of Paris, in ſome provinces of France, Spain, and Germany, as alſo in America, where probably they have been carried from Europe. It ſeems to be an animal formed for a temperate climate, for there are not any in Ruſſia, and are rarely met with in Sweden, or any other northern country. Stags are much more generally diffuſed. They are found throughout Europe, even in Norway, and over all the north, Lapland, perhaps, excepted; in Aſia, eſpecially in Tartary, they are numerous, as well as in the northern provinces of China. They are likewiſe found in America; for thoſe of Canada differ only from ours in the height of their horns, and in the direction of their antlers, which is ſometimes not ſtraight forward, as in the heads of the common ſtags, but turned backward by a very evident inflection;

tion; but this form of the horns is not confined to the Canadian ſtag, as it is nearly the ſame in the Corſican ſtags; and ſome that came from Ruſſia and Germany, have a kind of crown at the ſummit of their antlers, but theſe are only varieties, and not different ſpecies. There are large and ſmall ſtags in America as well as in Europe, and yet, however diffuſed their ſpecies may be, they ſeem to be confined to cold and temperate climates. The ſtags of Mexico, and other parts of South America; thoſe of the Cayenne; thoſe called ſtags of the Ganges, which are ſpoken of by M. Perault, under the name of the Sardinian hinds; thoſe to which travellers have given the appellation of Cape ſtags; thoſe of Guinea, and other warm countries, belong not to the common ſpecies, as will appear from the particular hiſtory we ſhall give of each of thoſe animals.

As the fallow-deer is leſs ſavage, more delicate, and indeed more domeſtic that the ſtag, he is alſo ſubject to a greater number of varieties. Beſide the common and white fallow-deer, we know of ſeveral other kinds, as thoſe of Spain, which are almoſt as large as ſtags, but whoſe necks are more ſlender, their colour darker, their tails black underneath, and are longer than thoſe of the common deer; thoſe

of

of Virginia, which are almoſt as large as thoſe of Spain, and are remarkable for the ſize of their genital organs. There are others with compreſſed foreheads, whoſe ears and tails are longer than thoſe of the common fallow-deer, and who have the hoofs of their hind legs marked with a white ſpot; others are ſpotted or ſtreaked with a white, black, or yellow, and there are others entirely black, all of which have their horns more flat, broad, and are better furniſhed with antlers than thoſe of the ſtag, they likewiſe incline more inwardly, and are more palmated at the points. Of the common fallow-deer the tail is longer than that of the ſtag, and its hair is lighter. The horns of the buck, like thoſe of the ſtag, are ſhed every year, and are nearly the ſame time in being renewed; but as this change happens later, ſo is their rutting ſeaſon, by from fifteen days to three weeks than that of the ſtag. They are neither ſo furious at this time, nor exhauſt themſelves ſo much by the violence of their ardour: they never quit their own paſtures in ſearch of the females, though they will diſpute and fight furiouſly for the poſſeſſion of them. It often happens, that when there is a great number in one park that they will divide into two parties and engage each other with

with much reſolution: theſe conteſts generally occur from a wiſh they both have of grazing upon ſome particular ſpot. Each of theſe parties has its own chief, namely, the oldeſt and ſtrongeſt in the herd. Theſe lead on to the engagement, and the reſt follow under their direction. Their combats are ſingular from the conduct by which their efforts ſeem to be regulated; they attack with order, and ſupport the aſſault with courage; mutually aſſiſt each other, retire, rally, and never yield the victory upon a ſingle defeat; for the battle is daily renewed till the weakeſt party are quite defeated, from which time they are obliged to retire to ſome ſecluded part of the park, and be contented with the worſt paſturage. They love elevated and hilly countries. When hunted they do not fly far before the hounds, like the ſtag, but ſtudy entirely how to eſcape from the dogs by ſtratagem; when preſſed and heated they will plunge into the water, though it is very rare that they will take to a great river. In the chace, therefore, between the fallow deer and the ſtag, there is no eſſential difference, their inſtincts and artifices are the ſame, though more put into practice by the former; which, together with the lightneſs of his ſtep, render it more difficult for the dogs to avoid being deceived.

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The fallow deer is eaſily tamed and feeds upon many things which the ſtag refuſes; he alſo preſerves his veniſon better; and even after rutting, and the longeſt winter follows, he does not appear exhauſted, but continues nearly in the ſame ſtate throughout the year. He browzes cloſer than the ſtag, for which reaſon he is more prejudicial to young trees, and often ſtrips them too cloſe for recovery. The young deer eat faſter and with more avidity than the old. At the ſecond year they ſeek the female, and, like the ſtag, are fond of variety. The doe goes with young eight months and ſome days; ſhe commonly produces one fawn, ſometimes two, but very rarely three. They are capable of engendering from the age of two years to that of fifteen or ſixteen; and in fine, they reſemble the ſtag in all his natural habits, and the greateſt difference between them is the duration of their lives. From the teſtimony of hunters it has been remarked that ſtags live to the age of 35 or 40 years, and from the ſame authority we underſtand that the fallow deer does not live more than 20. As they are ſmaller than the ſtag, it is probable that their growth is ſoon completed. In all animals the duration of life is proportioned to that of the growth, and not to that of geſtation, for

here the geſtation is the ſame; and in other ſpecies, as the ox, though the time of geſture is long, that of the duration of life is very ſhort; from whence it follows that we ought not to calculate the duration of life by the time of geſtation, but by that which Nature has required for perfecting the growth, reckoning from the birth to the almoſt entire expanſion of the body.

THE ROE-BUCK.

THE ſtag, as being the nobleſt inhabitant of the wood, occupies the moſt ſecret ſhades of the foreſt, and the elevated parts of mountains, where the ſpreading branches form a lofty covert; while the roe-deer, as if an inferior ſpecies, contents himſelf with a more low ly reſidence, and is ſeldom found but among the thick foliage of young trees. But if he is leſs

leſs noble, ſtrong, and elevated in ſtature than the ſtag, he has more grace, vivacity and courage; and when the fawns are attacked, he will defend them even againſt the ſtag himſelf. He is more gay and active, his ſhape is more agreeable and elegant; his eyes are more brilliant and animated; his limbs are more ſupple; his movements quicker, and with equal vigour and agility he ſeems to bound without effort. His hair is always clean, ſmooth, and gloſſy; he never rolls in the mud like the ſtag; he frequents the drieſt and moſt elevated places, whore the air is the moſt pure; he has alſo more cunning and fineſſe, more difficult to chace, and derives a greater number of reſources from his inſtinct. Though he has the diſadvantage of leaving a ſtronger ſcent behind him than the ſtag, which excites in the dogs a greater degree of ardour, he knows better how to avoid their purſuit by a rapid flight and repeated doublings; for he delays not, like the ſtag, the application of art till his ſtrength begins to fail him; but even in the firſt inſtance, when he finds his efforts of ſpeed are not likely to ſave him, he immediately begins to retrace his former ſteps, and continues going backwards and forwards till, by his various windings, he has confounded the ſcent and joined the laſt emanations to thoſe of his former courſe;

having done which, by a great bound he withdraws to one ſide, lies flat upon his belly, and ſuffers the whole pack to paſs cloſe by him without attempting to move.

The roe-buck differs alſo from the ſtag in his natural appetites, inclinations, and whole habits of living. Inſtead of herding together, they live in ſeparate families; the ſire, dam, and young, form a little community, and never admit a ſtranger into it. All other animals of the deer kind are inconſtant in their amours, but the roe-deer never forſake each other. As the females generally produce two fawns, one of each ſex, they are brought up together, and acquire an attachment ſo ſtrong, that they never ſeparate, unleſs by ſome misfortune. This attachment is ſomething more than love, for though they are always together, they feel the ardour of the rut not more than fifteen days in the year, that is, from the end of October to about the middle of November. They are not at that time like the ſtag, overloaded with fat, have no ſtrong ſmell, no fury, nothing, in ſhort, which alters their ſtate; the only obſervable difference is that they drive away their fawns; the buck forcing them off to make room, as it were, for a ſucceeding progeny. When the rutting ſeaſon is over, however, the fawns return to their

their dams, and remain with them ſome time, after which they quit them entirely to form ſeparate families of their own.

The female goes with young five months and a half, and brings forth about the end of April or beginning of May. The hinds, as already obſerved, go more than eight, which is alone ſufficient to prove their difference of ſpecies, that they can never intermix, nor produce an intermediate race. In this reſpect, as well as in figure and make, they approach the ſpecies of the goat, as much as they recede from that of the ſtag; for the goat goes with young nearly the ſame time, and perhaps the roe-deer ought to be regarded as a wild goat, which, by feeding ſolely on trees, carries branches on his brows inſtead of horns. When about to bring forth, the female ſeparates from the male, and conceals herſelf in the deepeſt receſſes of the woods, to avoid the wolf, who is her moſt dangerous enemy. At the expiration of ten or twelve days, the fawns attain ſufficient ſtrength to follow her. When threatened with any danger, ſhe hides them in ſome deep thicket, and by way of preſerving them preſents herſelf to be chaced. But all her care is not ſufficient to prevent their being frequently carried off by dogs and wolves. This is indeed their moſt critical

critical time, and in which this ſpecies, which is not very numerous, ſuffers the greateſt deſtruction, as I have found by experience. I often reſide in a part of the country (Montbard in Burgundy) famous for roe-bucks, and where not a ſpring paſſes without a great number being brought me, ſome taken alive by men, and others killed by dogs; inſomuch that, without counting thoſe killed by wolves, I am convinced more are deſtroyed in the month of May than in all the reſt of the year; and I have obſerved, for more than twenty-five years, that as if there ſubſiſted a perfect equilibrium between the cauſes of deſtruction and renovation, their number is nearly the ſame in the ſame diſtricts. It is not difficult to count them, as they are no where very numerous, and keep together in ſeparate families, and diſtinct from that of any other. In a coppice, for example, of 100 acres in circumference, there will be found one family, or from three to five individuals, for the females will ſometimes have but one fawn, and at others three, but either caſe ſeldom happens; in another diſtrict more extenſive, there will be ſeven or eight, that is two families; and I have remarked that in each diſtrict their numbers have been uniform, excepting in thoſe years when the winters have been remarkably ſevere;

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in that caſe the whole family is deſtroyed, but by the next year it is ſucceeded by another; and thoſe diſtricts to which they give the preference are always ſtocked with nearly the ſame quantity of them. Notwithſtanding this it is aſſerted, that this ſpecies, upon the whole, is diminiſhing in number; and, indeed, it is true, that there are provinces in France where not one of them is to be found; that though common in Scotland there are none in England; very few in Italy, and they are more ſcarce in Sweden than formerly, &c. But theſe effects might ariſe from the diminution of foreſts, or from the exceſſive rigour of ſome winters, like that of 1709, by which they were almoſt all deſtroyed in Burgundy, and a number of years elapſed before they were recruited. Beſides they are not equally fond of every country, and even in the ſame they are partial to particular ſpots. They love hilly grounds, and never remain in the deep receſſes of extenſive foreſts, but prefer the ſkirts of thoſe woods which are ſurrounded with cultivated fields, and open coppices, where the brambles, buckthorn, &c. grow in plenty.

The fawns continue with the old ones eight or nine months, and ſoon after ſeparating their horns begin to appear, ſimple knobs without antlers;

antlers; theſe they ſhed at the latter end of autumn, and have them renewed during the winter; differing in this from the ſtag, who ſheds them in ſpring, and renews them in the ſummer. Several cauſes contribute to produce theſe different effects. In ſummer, the ſtag takes a great quantity of nouriſhment, and grows very fat; in the rutting ſeaſon he exhauſts himſelf ſo much that the whole winter is not more than ſufficient to effect his recovery. At this time, ſo far from there being a ſuperabundance of nouriſhment, he experiences an abſolute ſcarcity, of courſe his horns cannot ſprout till ſpring, when his nouriſhment is again ſuperabundant. The roe-buck, on the contrary, who never exhauſts himſelf ſo much, has leſs occaſion for repair; and as he is never encumbered with fat, as no change is made in him during the time of the rut, but he is always nearly the ſame, ſo he has, at all times, the ſame ſuperfluity; ſo that even in winter, and ſoon after the rut, he ſheds and renews his horns; and it appears that theſe productions, which may be termed vegetable ones, are formed of an organic and ſuperfluous matter, though ſtill imperfect, and mixed with inanimate particles; ſince in their growth and ſubſtance they preſerve the vegetable qualities;

whereas

whereas the ſeminal fluid, whoſe production is not ſo early, is a matter altogether organic, diveſted of inanimate particles, and aſſimilated to the body of the animal. When the roe-buck has completely repaired his horns, he rubs them againſt the trees in the ſame manner as the ſtag, in order to ſtrip them of the ſkin with which they are covered; and this he generally does about March, before the trees begin to ſhoot; hence it is not the ſap of the wood which tinges the horns of the buck; yet they are brown in thoſe that have brown hair, and yellow when the animal is red, conſequently the colour of the horns ariſes ſolely as has already been remarked, from the nature of the animal, and the impreſſion of the air. The ſecond horns of the roe-buck have generally two or three antlers on each ſide; the third have three or four; the fourth, five; and they ſeldom have more; and the old ones are diſtinguiſhed by the thickneſs of their ſtems. While their horns are ſoft they are extremely ſenſible of pain. Of this I witneſſed a ſtriking proof. With a ball from a gun the young ſhoot of a roe-buck's horn was taken clear off, and by which he was ſo ſtunned that he fell down as if he was dead; the ſhooter, who was near, ſeized him by the foot, but the animal

ſuddenly recovering his ſtrength and feeling, dragged the man, though very ſtrong and vigorous, above thirty paces, till he diſpatched him with an hanger; it was then found that he had received no other wound than that of the hanger, and what the ball had made in ſtriking the horn. It is alſo well known that flies are intolerable tormentors to the ſtag; while his horns are growing, he withdraws to the thickeſt covert of the wood, where the flies leaſt frequent, becauſe the irritation is inſupportable when they fix upon the tender horns. Thus there is an intimate communication between the ſoft part of this living wood, and the whole nervous ſyſtem of the animal. The roe-buck, who has nothing to fear from theſe enemies, as he renews his horns in the winter, does not retire in this manner, but he walks with caution, and holds his head low for fear of ſtriking it againſt the branches. In the ſtag, fallow-deer, and roe-buck, there are two bony eminences on which their horns grow; theſe begin to ſhoot at the end of five or ſix months, and ſoon arrive at their full growth; inſtead of enlarging as the animal advances in age, they diminiſh every year, and are the moſt certain marks for diſtinguiſhing the age of all the ſpecies. I think

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it is eaſy to account for this effect, which at firſt appears ſo ſingular, but which ceaſes to be ſo when we reflect, that the horns which grow upon this eminence muſt preſs upon it during the whole time of their growth, which is for ſeveral months in the year; therefore, however hard they may be they muſt continually lower and contract by the compreſſion which is reiterated every time the roe-buck repairs his horns. This is likewiſe the reaſon that though the trunk continues to increaſe in thickneſs, as the animal advances in years, yet the height of the horns, and number of branches, diminiſh ſo much, that when he arrives at a great age there remain only two large prickets, or fantaſtic and ill-ſhaped knobs.

As the female goes only five months and a half with young, and as the growth of this fawn is more rapid than that of the young ſtag, ſo is his life much ſhorter; and I do not believe it ever extends beyond twelve or fifteen years. I have reared ſeveral, but could never keep any above five or ſix years. They are very delicate in chooſing their food, require much air, exerciſe, and ſpace to range in, which is the reaſon they cannot ſuſtain the inconveniences of a domeſtic life, but in their younger years; for a roe-buck to live at his

eaſe and comfortable, he muſt be ſupplied with a female and a park of at leaſt an hundred acres to range in. They may be tamed, but can never be rendered obedient or familiar; they always retain ſomewhat of their wild nature, are eaſily terrified, and will then run againſt a wall with ſuch force as ſometimes to break their legs. However tame they may be, they are not to be truſted, for the bucks are apt to adopt many caprices; they will take an averſion to particular perſons, and run at them with their horns with a force ſufficient to knock a man down, and having done ſo, they will continue to trample on him with their feet. The roe-buck does not cry ſo frequently, nor with ſo ſtrong a voice as the ſtag. The young ones have a ſhort and plaintive cry, their note being *mi, mi!* which they generally uſe when they are in want of food. This note is eaſily imitated, and by uſing it the dams may be brought to the very muzzle of the hunter's gun.

The roe-bucks remain in winter in the thickeſt coppices and feed on briars, broom, heath, &c. In ſpring they repair to the more open bruſh-wood, and browſe upon the buds and young leaves of almoſt every tree: this warm food, fermenting in their ſtomachs, inebriates

briates them to ſuch a degree that they are then eaſily ſurpriſed; for they know not whither they go; frequently come out of the woods, will approach flocks of cattle, and even the habitations of men. In ſummer they inhabit the more lofty coppices, from which they ſeldom iſſue, except in extreme heats to drink at ſome cool fountain; for when the dew lies in quantities, or the leaves are moiſtened with rain, they never drink. They ſelect the choiceſt kinds of aliment, being extremely delicate in their eating, neither feeding with that indifference nor avidity as the ſtag, and very ſeldom approach cultivated grounds. The fleſh of theſe animals is excellent food, yet there is much diſtinction to be made in the choice of the veniſon. The quality depends greatly upon the country in which they have lived; although in the moſt plentiful, both good and bad are to be found. The fleſh of the brown roe-buck is more delicate than that of the red: that of thoſe which have paſſed the ſecond year is tough and ill-taſted, while that of the females, though farther advanced in years, is more tender. Thoſe which are bred in plains and valleys are not good; thoſe from moiſt lands ſtill worſe; there is but little taſte in thoſe reared in parks, and, in a word, there are no good roe-bucks but thoſe

thoſe which have inhabited dry and elevated countries, interſperſed with little hills, woods, arable lands and ſtreams, where they have a ſufficiency of good air, food, freedom, and above all, ſolitude; for ſuch as have been often diſturbed are thin, and the fleſh of thoſe which have been often hunted before is taſteleſs and inſipid.

This ſpecies, which is not ſo numerous as that of the ſtag, and ſeldom found in many parts of Europe, is much more abundant in America, where there are two ſorts; the red, which are large, and a brown one conſiderably ſmaller, which has a white ſpot behind; and as they are found both in the northern and ſouthern parts of America, it is probable they differ more from each other than from thoſe in Europe. In Louiſiana they are extremely common, and are larger than thoſe in France. They are alſo found in Braſil; for the animal which is there called *Cujuacu-apara*, differs not more from the European roe-buck, than the Canadian ſtag from ours. There is only ſome little variation in the form of the horns. "In Braſil, ſays Piſo, there are two ſorts of the roe-buck, one of which has no horns, and is called the *Cujuacu-été*, and the other is furniſhed with horns, and is called *Cujuacu-apara*. The horned

horned ones are much leſs than the others; their hair ſmooth, gloſſy, and a mixture of brown and white, when they are young, but the white is loſt as they advance in years. The hoof is divided into two black toes, upon each of which there appears to be grafted another and ſmaller one; the tail is ſhort, the eyes large and black, the noſtrils open, the horns are of a middling ſize, and fall off annually. The females go five or ſix months with their young;" and another author adds, "That their horns are divided into three branches, and that the loweſt branch is the longeſt, and divides into two." We may fairly conclude from the above deſcriptions, that the *apara* is a variety of the ſpecies of the roe-buck; and Ray ſuppoſes that the *Cujuacu-ētē* and the *Cujuacu-apara* are both of the ſame ſpecies, and that one is the male and the other the female. I ſhould acquieſce in this opinion, if Piſo had not expreſsly ſtated, that thoſe which have horns are ſmaller than the others; for it does not appear probable that the females ſhould be ſo much larger than the males, when in every other place the contrary is the caſe. At the ſame time, although the *Cujuacu-apara* may be nothing more than a variety of our roe-buck, to which the

the *capreolus marinus* of Johnſton may be added, I cannot pretend to determine with reſpect to the *cujuacu-ētē*, at leaſt until we have received more certain information.

SUPPLEMENT.

IN my original work I remarked that wild animals were generally either white, brown, or grey; and that ſuch as fallow-deer, rabbits, &c. became white, from being kept in a domeſtic ſtate, but M. l'Abbé de la Villetta, in a letter dated June 17, 1773, informs me, that they are ſometimes ſo in their natural ſtate; for a man belonging to his brother, who had an eſtate near Orgelet, in Franche-comte, brought home two old roe-deers, one of which was of the common colour, and the other a female perfectly white, having only black hoofs, and a black ſpot at the end of her noſe.

M. de Fontenelle, the king's phyſician, at New Orleans, in a letter to me, ſays, that "roe-bucks are very common in North America, that they entirely reſemble thoſe of Europe, except

except being ſomewhat larger, particularly in Louiſiana, where he thinks they are nearly as big again as thoſe in France. He ſays they are very eaſily tamed, as does M. Kalm, who aſſerts, that he had a roe-buck which went every day to the woods, and returned to his houſe regularly every night. According to M. de la Borde, there are four kinds of ſtags at Cayenne, indiſcriminately called hinds, whether males or females. "The firſt are called wood, or red hinds, which conſtantly inhabit the thickeſt part of the foreſts. The ſecond, which are bigger, though of the ſame colour, are called the barallou hind; both of theſe ſpecies have two conſiderable glands on each ſide of the noſtrils, containing a white fœtid humour. The third is called the Savanna hind, which is of a grey colour, and more common than either of the others; neither are they ſo large, though their horns are longer and more branched: they are called Savanna hinds becauſe they ſeek out the lands covered with marſhes; they feed upon the manioc, and are very deſtructive to plantations. Their fleſh is excellent food, and far preferable to that of European ſtags. They are ſo tame at Cayenne, that they run about the ſtreets, and go in and out of town without diſcovering the

ſmalleſt degree of apprehenſion. The females are ſaid even to go into the woods after wild males, and to return again when they have got fawns. The laſt is called the caricou; he is leſs than either of the others, his colour is a light grey, and his horns are ſtraight and pointed. He keeps himſelf entirely to large woods, and never ventures near parts that are inhabited; they are, nevertheleſs, very eaſily rendered tame and familiar; and the females produce but one fawn at a time." Notwithſtanding the ſtreſs which has been laid upon theſe remarks, I am opinion, that all theſe pretended ſpecies of ſtags or hinds, as above deſcribed, are merely varieties of the roe-buck, which are more numerous in the new than in the old continent, and which I apprehend will fully appear to ſuch as compare thoſe deſcriptions with our hiſtory of the mazame, or Mexican deer.

THE HARE.

THE ſpecies of animals which are moſt numerous are not the moſt uſeful. Nothing can be more noxious than the multitudes of rats, mice, locuſts, caterpillars, and many other inſects, of which it would ſeem that Nature rather admitted than ordained the extraordinary increaſe. But thoſe of the hare and rabbit are advantageous to us both from their number and utility. Hares are abundantly ſpread over the face of the earth; and rabbits, though originally natives of particular climates, multiply ſo prodigiouſly in almoſt every place to which they are tranſported, that, inſtead of being extirpated, no ſmall art is required in order to diminiſh their too-often inconvenient number. When we reflect on the aſtoniſhing fecundity of each particular ſpecies, and on the quick and prodigious multiplication of certain animals

which come into exiſtence, as it were, to deſolate the fields and ravage the earth, we are aſtoniſhed they do not oppreſs Nature with their numbers, and after having devoured her productions become themſelves victims to the deſtructions they have made. We cannot view without terror thoſe thick clouds, thoſe winged phalanxes of famiſhed inſects which ſeem to menace the whole globe, and whether lighting on the fruitful plains of Egypt, or of India, in an inſtant deſtroy the labours and hopes of a whole people; and ſparing neither grain, fruit, herbs, nor leaves, ſtrip the earth of its verdure, and change the richeſt countries into barren deſarts. We behold rats deſcending from the northern mountains in innumerable multitudes, ruſhing like a deluge of living matter, overflow the plains, ſpread themſelves over the ſouthern provinces, and after having deſtroyed in their paſſage every thing that lives, or vegetates, finiſh their career with infecting the earth and air with their putrid carcaſes. We behold in the ſouthern regions myriads of ants iſſuing from the deſarts, which, like an exhauſtleſs torrent, arrive in thick and ſucceſſive columns, take poſſeſſion of every ſpot, drive away men and animals from their habitations, and never retire till they have cauſed a general

general devaſtation. And in thoſe times, when man himſelf was but half civilized, and ſubject to all the laws and even exceſſes of Nature, were there not ſimilar inundations of the human ſpecies? Have there not been Normans, Huns, and Goths, whole nations, or rather tribes, of ferocious people, without dwellings, and without diſtinction, who have ſuddenly ruſhed from their caves, and marched in tumultuous herds, and without any force but what conſiſts in their numbers, overthrown empires, deſtroyed nations, and having ranſacked the earth, concluded by re-peopling it with a race not leſs barbarous than themſelves.

Theſe æras, theſe great events, though ſo ſtrongly marked in the Hiſtory of Mankind, are yet only ſlight viciſſitudes in the ordinary courſe of animated nature, which is in general always uniform and the ſame; its movements are regulated by two unchangeable wheels; the one, unbounded fecundity of every ſpecies; the other, the innumerable cauſes of deſtruction which are perpetually reducing the produce of that fecundity to a determinate meaſure, ſo as to preſerve nearly the ſame number of individuals in each ſpecies. And as multitudinous animals, which appear of a ſudden, diſappear in the ſame manner, without augmenting

menting their race, ſo does the human ſpecies always remain the ſame. What variations may happen in the latter, are only more ſlow, becauſe the life of man being longer than that of ſmall animals, the alternate changes of increaſe and diminution muſt neceſſarily require a greater portion of time. But time itſelf is only an inſtant in the ſucceſſion of ages, and only ſtrikes us the more forcibly, from having been accompanied with horror and deſtruction; for, taking all the inhabitants of the globe together, the number of the human race, like that of other animals, will, at all times, appear to be nearly the ſame; as this depends entirely upon an equilibrium of phyſical cauſes, an equilibrium to which every thing has long been reduced, and which neither the efforts of man, nor any moral circumſtances whatever, can diſſolve; as thoſe circumſtances themſelves are alſo dependent on phyſical cauſes. Whatever care man may beſtow on his own ſpecies, he will never be able to render it more numerous in one place without deſtroying or diminiſhing it in another*. As ſoon as any one

* We were at firſt inclined to combat this poſition of our learned author, with thoſe reaſons, founded upon facts, which may be adduced againſt it; but he has himſelf ſo completely replied to it at the end of his diſſertation upon wild animals, page

one country is over-ſtocked with inhabitants they diffuſe themſelves over other countries, or deſtroy each other, and not unoften eſtabliſh laws and cuſtoms calculated to prevent an exceſs of multiplication. In climates of exuberant fertility, as China, Egypt, and Guinea, they baniſh, mutilate, drown, or ſell their infants; in Catholic countries they condemn them to perpetual celibacy. Thoſe who actually exiſt find no difficulty in arrogating to themſelves the diſpoſal of the rights of thoſe who have no exiſtence. Conſidering themſelves as neceſſary, they annihilate contingent beings, and ſcruple not to ſuppreſs future generations for their own eaſe and convenience. Mankind, without perceiving it, treat their own ſpecies exactly in the ſame manner as they do other animals; they cheriſh and multiply, or neglect and deſtroy them, according as it ſuits their purpoſe; and as all moral effects depend upon phyſical cauſes, which, ever ſince the earth aſſumed its form, are fixed and permanent, it follows that in the human, as well as in the other

page 26, of this volume, that any thing further than repeating his own obſervation muſt be unneceſſary; for he there ſays, that, "in *proceſs of time, we may reaſonably ſuppoſe the ſurface of the earth will be equally inhabited*," which is ſurely impoſſible without a conſiderable increaſe.

other animal ſpecies, the number muſt likewiſe be uniform and unalterable. It is to be obſerved that this fixed ſtate, this permanent number, are not to be conſidered in an abſolute ſenſe; all phyſical and moral cauſes, and all the effects which flow from them, are compriſed and balanced within certain limits, more or leſs extended, but never ſo large as to deſtroy the equilibrium. As the whole univerſe is in a ſtate of perpetual motion, and as all the forces of matter act againſt and counterbalance each other, ſo every thing is brought about by a kind of oſcillation, to the middle points of which we refer the ordinary courſe of Nature, and whoſe extremes are the fartheſt removed from that courſe. In effect, therefore, we find, that an exceſs of fecundity, either in animals or vegetables, is the uſual fore-runner of ſterility. Plenty and ſcarcity preſent themſelves ſo alternately, and often follow ſo cloſe upon each other, that a tolerable judgment may be formed of the product of one year by that of the preceding. The apple, plum, oak, beech, and indeed moſt fruit and foreſt trees, do not bear plentifully two years together. So likewiſe it is with caterpillars, May-bugs, flies, field mice, and many other animals, who if they multiply to exceſs one year,

year, they will produce but a very ſmall number the next. What, indeed, would become of all our fruits of the earth, of our moſt uſeful animals, or even of man himſelf, if theſe inſects were to be proportionally increaſed after a fertile ſeaſon? But this cannot be, as the cauſes of deſtruction and ſterility immediately follow thoſe of an exceſſive multiplication. Independent of contagion, a neceſſary conſequence of too great a maſs of living matter aſſembled in one place, there are, in every ſpecies, certain cauſes of death, as we ſhall hereafter have occaſion to mention, and which are ſufficient to counterbalance any preceding exceſs of fecundity. I muſt again obſerve that this is not to be taken in an abſolute or ſtrict ſenſe, eſpecially with reſpect to thoſe ſpecies which do not remain entirely in a ſtate of nature. Thoſe which man takes care to rear are more abundant than they otherwiſe would be; but as his attention has its limits, ſo the increaſe which flows from it has long ſince been confined by unalterable bounds; and though, in civilized countries, the human ſpecies and domeſtic animals, are more numerous than in other climates, they are never ſo in exceſs; becauſe the very power which calls them into exiſtence, deſtroys them when they become troubleſome.

In thoſe diſtricts which are reſerved for the chace, four or five hundred hares are ſometimes killed in the courſe of one day's ſport. Theſe animals multiply amazingly; they engender at all ſeaſons, and are in a condition to propagate before the firſt year of their life is expired. The females do not go with young above thirty or thirty-one days; they produce three or four, and are immediately after ready to receive the male; they likewiſe receive him during the time of geſtation, and by a particular formation of their organs are often found to have a ſuper-fœtation; for the vagina and the matrix are continuous, and the latter has neither neck or orifice into the womb, as in other animals; yet each horn has an orifice which opens into the vagina and dilates during the time of bringing forth; and which forming two diſtinct uteri, act independently of each other; ſo that the females of this ſpecies are capable of conceiving and bringing forth by each matrix at different times; and conſequenly ſuper-fœtion muſt be as common among theſe animals, as it is rare among thoſe which have not this double organ. It is plain, therefore, that the females may be impregnated at all times. By another ſingularity in their conformation they are found to be as laſcivious as

they

they are fruitful; the gland of the clitoris is prominent and almoſt as large as the ſexual diſtinction of the male; and as the vulva is hardly viſible, and the males when young have no exterior marks, it is often difficult to diſtinguiſh the ſexes. It is theſe circumſtances which have given riſe to the opinions that there are many hermaphrodites among theſe animals, that the males ſometimes bring forth, and that ſome are alternately males and females and perform the office of either ſex; becauſe the females being more laſcivious than the males, will get upon them, and becauſe they ſo much reſemble each other externally, that unleſs very cloſely examined one ſex may be miſtaken for the other.

The young ones have their eyes open when brought forth; the mother ſuckles them about twenty days, after which they ſeparate and provide for themſelves; they do not withdraw far from each other, nor from the place of their birth; yet they live in ſolitude, each compoſing itſelf a form at the diſtance of ſixty or eighty paces; thus when we find a leveret we are almoſt certain of finding one or two more in the neighbourhood. They feed more by night than day; and chiefly upon herbs, leaves, fruits, and grain, but above all they prefer thoſe plants which yield a milky juice; they even

eat the bark of trees in winter, except that of the alder and lime, neither of which they ever touch. When reared at home they are fed with lettuces and other herbs; but the fleſh of theſe domeſtic fed hares has always a bad taſte. They ſleep and repoſe themſelves in their forms during the day, and only live, as it were, in the night, when they range about, feed, and copulate; they may be ſeen by moonlight playing, leaping, and purſuing each other, but the ſmalleſt noiſe, even the ruſtling of the leaves, is ſufficient to alarm and make them run different ways.

Some authors have aſſerted that hares chew the cud; but I cannot believe that opinion to be well founded, as they have but one ſtomach, and the conformation of that, as well as the other inteſtines, are altogether different from thoſe of ruminating animals. The cœcums of the latter are ſmall, while thoſe of hares are extremely large; and if we add to the capacity of the ſtomach this large cœcum, we ſhall eaſily conceive, that being capable of receiving a great quantity of food, this animal may live upon herbage alone, like the horſe and the aſs, which have alſo a large cœcum and but one ſtomach, and conſequently cannot ruminate.

Hares,

Hares ſleep much, but always with their eyes open. They have neither eye-lids, nor cilia, and ſeem to have bad eyes; but, as if for a recompence for that defect, their hearing is exceedingly acute, and their ears are very large in proportion to the ſize of their bodies. They move theſe long ears with great facility, and uſe them as an elm to direct their courſe, which is ſo rapid that they eaſily outſtrip all other animals. Their fore legs being much ſhorter than their hind ones they can more eaſily mount than deſcend, for which reaſon when purſued they always make towards the riſing grounds. Their running is a kind of leaping gallop, and they proceed without making the ſmalleſt noiſe, as their feet, even underneath, are covered with hair, and perhaps they are the only animals which have hair growing within ſide of their mouths. The hare lives not above ſeven or eight years; he completes his growth in one, and the duration of its life is proportioned thereto, and he lives to about ſeven times that ſpace. Some indeed aſſert that the males live longer than the females, but that I much doubt. They paſs their lives in ſolitude and ſilence, and never exert their voices but when ſeized or wounded; their cry is ſharp and ſtrong, and not unlike the human

human voice. They are not ſo ſavage as by their habits and manners might be ſuppoſed; they are gentle, and ſuſceptible of a ſpecies of improvement. They are eaſily tamed, but never acquire that degree of attachment which is requiſite to render them domeſtic, for thoſe which are taken very young, and brought up in a houſe, will take the firſt opportunity to eſcape and fly into the country. As they have a good ear, as they ſit of their own accord upon their hind legs, and uſe the fore legs like arms, ſome have been ſo tutored as to beat a drum, to perform geſtures in cadence, &c.

In general the hare poſſeſſes ſufficient inſtinct for its preſervation, and ſagacity to eſcape its enemies. It prepares itſelf a form, or neſt; in winter he chuſes a ſpot expoſed to the ſouth, and in ſummer one to the north. To conceal himſelf from view he hides among hillocks of the ſame colour with his own hair. "I have ſeen," ſays du Fouilloux, "a hare ſo cunning, that upon hearing the huntſman's horn he ſtarted from his form, and, though at the diſtance of a quarter of a league, haſted to a pond, and there hid himſelf among the ruſhes in the middle of it, and thus eſcaped the purſuit of the dogs. I have ſeen a hare, which after running more than two hours before the dogs,

dogs, diſlodge another, and take poſſeſſion of his form. I have ſeen others, ſwim over two or three ponds, of which the ſmalleſt was not leſs than eighty paces broad. I have ſeen others, after a chace of two hours, enter a ſheep cot, and remain among the cattle. I have ſeen others, when cloſely purſued, take refuge among a flock of ſheep, from which they would not be ſeparated. I have ſeen others, upon hearing the noiſe of the hounds, conceal themſelves in the earth. I have ſeen others, which have gone along one ſide of the hedge returned by the other, ſo that there was only the thickneſs of the hedge between them and the dogs; and I have ſeen others, after a chace of half an hour, mount an old wall ſix feet high, and take refuge in a hole covered with ivy." But theſe facts are doubtleſs the greateſt efforts of their inſtinct, for their common reſources are leſs refined and intricate. They, in general, when purſued, content themſelves with running rapidly, and afterwards tracing and retracing their own ſteps. They never direct their courſe againſt the wind but always run with it. The females do not run ſo far out as the males, but they double more frequently. Hares, in general, if hunted upon their native ſpot, do not remove

remove a great way from it, but return to their form, and if chaced for two ſucceſſive days they make exactly the ſame doublings on the ſecond as they did on the firſt. If a hare runs ſtraight forward, and to a great diſtance, it is a proof of his being a ſtranger to that ſpot. This generally happens during their moſt particular times of rutting, which are in January, February and March, when the male hares finding but few females in their own diſtricts will roam for ſeveral leagues in ſearch of them; but immediately upon being rouſed by the dogs they make towards their native abodes, and never return again. The females do not thus go abroad; they are larger than the males, but have leſs ſtrength and agility, and are more timid, for they never allow the dogs to come ſo near their forms as the males, and make uſe of more doublings and artifice. They are alſo more delicate, and are ſuſceptible of the impreſſions of the weather; they dread the weather, and even avoid the dews; whereas among the males there is a kind which are fond of water, and are chaced in marſhy and watery grounds, but the fleſh of this ſort has a very bad taſte; and, in general, the fleſh of all thoſe which inhabit low vallies is whitiſh and inſipid, while thoſe in elevated countries, where the

the wild thyme, and other fine herbs abound, are delicious to the palate. It has alſo been remarked, that thoſe which live in the centre of the woods, even in the ſame countries, are not ſo good as thoſe that inhabit the borders, or live among the cultivated fields and vineyards; and that the fleſh of the female is always more delicate than that of the male.

The nature of the ſoil has a great influence on hares, as well as on all other animals. The hares of the mountains are larger and fatter than thoſe of the plains, and are alſo of a different colour, the former being browner, and having more white under the neck than the latter which are inclined to red. On high mountains, and in northern countries, they become white in winter, and recover their ordinary colour in the ſummer; it is a very few, and thoſe perhaps very old ones, that continue white, for all of them change more or leſs white as they advance in years.

The hares of Italy, Spain, Barbary, and other warm climates, are ſmaller than thoſe of France and more northern nations; and according to Ariſtotle they were of a leſs ſize in Egypt than in Greece. They are exceedingly plentiful in Sweden, Poland, France, England, Germany, Barbary, Egypt, the iſlands

of the Archipelago, particularly Delos, which was formerly called Lagaia, from the number of hares found in it. They are alſo plenty in Lapland, where they continue white for the whole ten months of the winter, and reſume their yellow colour during the two months of the ſummer only. It appears then that all climates are nearly equal to them. However it is obſerved that they are leſs numerous in the eaſtern countries than in Europe; that there are ſcarcely any in South America, though they are numerous in Virginia, Canada, in the land that border Hudſon's Bay, and in the Straits of Magellan. But theſe North American hares are perhaps of a different ſpecies from ours, for travellers tell us, that they are not only larger but that their fleſh is white, and has a very different taſte to that of the European hares. They add, that in North America theſe animals never ſhed their hair, and that their ſkins make excellent furs. In countries of exceſſive heat, as Senegal, Gambia, and particularly in the diſtricts of Fida, Apam, and Acra, and in other countries ſituate under the torrid zone in Africa, and America, as New Holland, and the iſthmus of Panama, there are alſo animals which travellers have taken for hares, but which ſeem rather to be a ſpecies of rabbit,

rabbit, which comes originally from the hot countries, and is never found very far to the north; whereas the hare is always fatter in proportion to the coldneſs of the country which he inhabits.

The fleſh of this animal, though ſo much eſteemed at the tables of Europeans, is not at all reliſhed by the eaſtern nations. It is true that the fleſh of the hare, as well as that of the hog, was forbidden as food by the law of Mahomet and the ancient Jewiſh law; though the Greeks and Romans held it in great eſtimation: "Inter quadrupedes gloria prima lepus," ſays Martial. In fact, both the fleſh and the blood of this animal is excellent; but the fat adds nothing to the delicacy of the fleſh; for the hare, when at its liberty in the open country, never grows fat; whereas he often dies with the exceſs of it when reared in a houſe.

The chace of the hare is an amuſement, nay often the principal occupation of people in the country. As it requires but little apparatus and expence, and is even uſeful, it is an amuſement univerſally agreeable. The hunter in the mornings and evenings watches at the corner of ſome wood for the hares going out or returning; and in the day he ſeeks to diſlodge him from his form. When the air is freſh and the

ſun ſhines bright, a hare, which has been chaced, may be diſcovered on its form by the fumes which ariſe from its body; and I have ſeen ſome ſo expert in this obſervation go half a league to kill a hare on its ſeat. This animal will ſuffer itſelf to be very nearly approached, eſpecially if the advance is made with a ſeeming inattention and obliquity. They are more afraid of dogs than men, and upon either ſmelling or hearing the former will immediately take flight; though they run ſwifter than the dogs, yet as they do not take a direct courſe, but turn and double round the ſpot from whence they were ſtarted, the greyhound, who rather hunts by ſight than ſmell, generally intercepts, ſeizes, and deſtroys them. They remain in the fields during the ſummer, in autumn among the vines, and in winter among the buſhes or in the woods, and in all ſeaſons they may be forced to the chace with proper hounds. They may be alſo taken by birds of prey. Owls, buzzards, eagles, foxes, wolves, and men make continual war upon them. Theſe animals have ſo many enemies, that they eſcape them only by chance, and are ſeldom allowed to enjoy that ſhort life they have allotted to them by Nature.

SUPPLEMENT.

FROM M. Hettlinger, I underſtand that the hares not uncommonly burrow in the clefts of the rocks among the mountains in the neighbourhood of Biagory, which is contrary to their practice in theſe climates, where they make forms and leave going underground to rabbits; that the former are not partial to thoſe places where the latter are numerous, is pretty generally known; to which Pontoppidan has added the remark, that rabbits do not multiply where hares are in abundance; he ſays, "In Norway, rabbits are ſeldom met with, but hares are very numerous; they are either brown or grey, during ſummer, and conſtantly change to white in the winter; they catch mice and eat them, like cats, and are ſmaller than thoſe found in Denmark." Whatever truth there may be in the other parts of his relation, their eating of mice is highly improbable, but it is not the only inſtance of his partiality for the marvellous.

M. le

M. le Vicomte de Querhoënt, in ſpeaking of the hares of the Iſle of France, ſays they are not bigger than the rabbits of France; that their hair is ſmoother, that they have a large black ſpot upon the hind part of their heads, and that their fleſh is very white; and M. Adamſon gives nearly a ſimilar deſcription of thoſe of Senegal, excepting the black ſpot upon their necks.

THE RABBIT.

ALTHOUGH the hare *(fig.* 58.) and the rabbit *(fig.* 59.) are ſo very ſimilar both in their external and internal conformation, yet they never intermix but form two diſtinct and ſeparate ſpecies. As hunters, however, have aſſerted that the male hares, in rutting time, run after and cover female rabbits, I have endeavoured to diſcover what would be the conſequence of ſuch an union. For this purpoſe I cauſed

Engraved for Barrs Buffon

FIG. 58 *

Hares Male and Female

FIG. 59 *

Rabbits Domestic and Wild

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cauſed ſome male hares to be reared with ſome doe rabbits; and ſome male rabbits with doe hares; but thoſe attempts were attended with no other effects than convincing me, that though theſe animals are ſo ſimilar in form, they are ſo different in nature as to be incapable of producing an intermediate race. One young hare, and a young female rabbit, nearly of the ſame age, did not live together three months; for, having acquired a little ſtrength, they became dreadful enemies, and their continual battles terminated in the death of the hare. Of two male hares, each of which I confined with a doe rabbit, one ſhared the ſame fate, and the other, being very ſtrong and ardent, never ceaſed from tormenting the rabbit, by endeavouring to cover her, and in the end occaſioned her death, either by wounds he gave her, or by too violent careſſes. Three or four doe hares, whom I matched with male rabits, experienced the ſame fate, though in a ſtill ſhorter time. Though there was never any produce, yet I am pretty certain that a copulation ſometimes took place; at leaſt that, notwithſtanding the reſiſtance of the female, the male was gratified: and there was more reaſon to expect a product from this union, than that of the rabbit and hen; of which, according to a certain

tain author*, the fruit would be, *chickens covered with hair, or rabbits covered with feathers!* This ſtrange concluſion was drawn from the act of a vicious male rabbit, who being unaccommodated with a female, made uſe of a hen as he might have done any other moveable: nor was there the leaſt probability to expect any product from two animals whoſe ſpecies were ſo diſtant, ſince nothing reſults from an union between the hare and rabbit, which ſeem ſo nearly to approach each other.

The fecundity of the rabbit is even greater than that of the hare; and without crediting Wotton's aſſertion, that a ſingle pair being left upon an iſland, multiplied to ſix thouſand at the end of a year; it is certain they encreaſe ſo prodigiouſly, in countries which are proper for their breed, that the earth cannot ſupply them with ſufficient ſubſiſtence. They deſtroy herbs, roots, grain, fruits, and even young trees and ſhrubs; and if it were not for dogs and ferrets, they would reduce the country to a deſart. The rabbit not only produces more frequently than the hare, but has more ways to eſcape its enemies, and to avoid the ſight of man. The holes which it digs in the earth, where it retires in the day, and where it brings forth

* See a French Tract entitled, L'Art d'Elever des Poulets.

forth its young, protect it from the wolf, fox, and birds of prey. Here the whole family live in perfect ſecurity; here the females nouriſh their young, for the ſpace of two months, nor ever conduct them abroad until they have ſufficient ſtrength to provide for themſelves. By this means they avoid the dangers of their early age; while hares, on the contrary, are deſtroyed in greater numbers at this period, than during all the reſt of their lives. This circumſtance alone may ſuffice to prove that the rabbit is ſuperior to the hare in point of ſagacity. They are alike in their conformation, and have equal power to dig retreats. Both are equally timid; but the one, poſſeſſed of leſs art, is contented with forming a reſidence on the ſurface of the earth, where it remains continually expoſed, while the other, by a ſuperior inſtinct, digs into the earth, and ſecures itſelf an aſylum; and as a proof this is the effect of ſentiment, we never ſee the domeſtic rabbit taking that trouble. They neglect ſecuring themſelves retreats, from the ſame reaſon that domeſtic birds neglect the building of neſts, becauſe they are equally protected from the inconveniences which both ſpecies in their natural ſtate muſt neceſſarily have been liable to. It has been often remarked, that when a warren is repleniſhed with do-

meſtic rabbits, they and their produce remain upon the ſurface, like hares; and that it is not until they have experienced a number of hardſhips, and paſſed ſeveral generations, they begin to dig holes in the earth for an aſylum.

The domeſtic rabbits, like all other domeſtic animals, vary in colour; white, black, ſpotted, and grey, are, however, the only colours which properly belong to Nature. The black rabbits are the moſt ſcarce. The wild rabbits are all of a greyiſh brown, which is alſo the predominant colour among the tame ones; for in every litter we conſtantly find brown rabbits even though the old ones were both black or both white, or the one white and the other black. It is ſeldom that more than one or two will reſemble ſuch parents, whereas the brown rabbits, though domeſtic, ſeldom produce any but of their own colour, and it is, as it were, by chance, if they bring forth white, black, or mixed ones.

Theſe animals are capable of engendering by the age of five or ſix months. It is aſſerted they are conſtant in their amours, and when attached to a female that they never forſake her. The latter is always ready to receive the male: ſhe goes with young 30 or 31 days, and brings forth from four to eight at a time.

Like

Like the doe hare ſhe has a double matrix, and conſequently may produce at two different times. It appears, however, that ſuper-fœtations are leſs frequent in this ſpecies than in that of the hare, which is perhaps owing to the females being more conſtant, and becauſe they copulate leſs out of ſeaſon. A few days before bringing forth they dig a freſh burrow, not in a ſtraight line, but in a crooked direction, at the bottom of which they make an excavation; after which they tear a quantity of hair from off their bellies, and thereof make a bed for their little ones. For the firſt two days they never quit them; they never ſtir abroad but when forced by hunger, and then return as ſoon as they have ſatisfied their appetite, which they do amazingly quick. Thus they tend and ſuckle their young for more than ſix weeks, and during which time the buck has no knowledge of them, for he never enters the burrow dug by the doe; and ſhe frequently, when ſhe leaves her little ones, ſtops up the entrance to it with earth diluted with her own urine. But when they begin to come to the mouth of the hole, and to eat groundſel, and other herbs, which the mother picks out, he then begins to know them; he takes them between his paws, endeavours to ſmooth their

hair, and licks their eyes. Each, in ſucceſſion, partakes equally of his cares; at which time the mother beſtows many careſſes upon him, and generally proves with young a few days after.

From a gentleman in my neighbourhood, who had amuſed himſelf many years in rearing rabbits, I received the following remarks: "I began," ſays he, "with only one male and one female; the former perfectly white, and the latter brown. Of their produce, which was very numerous, the greateſt part were brown, many of them white and mixed, and ſome few black. When the female is in ſeaſon the male ſcarcely ever leaves her; his temperament is ſo warm that I have ſeen him go with her five or ſix times within the hour. At this time the female lies on her belly, with her fore legs ſtretched out, and utters little cries, which ſeem rather to be tokens of pleaſure than pain. Their manner of coupling is ſimilar to that of the cat, only the male ſcarcely bites the neck of the female. Theſe animals pay great reſpect to parental authority, at leaſt I judge ſo from the great deference which all my rabbits ſhewed for their firſt anceſtor, whom I could eaſily diſtinguiſh by his whiteneſs, being the only male that I preſerved of that colour. The family

family very ſoon augmented, but even thoſe which had become fathers were ſtill ſubordinate to him. Whenever they fought, whether for females or food, their great progenitor would run to the place of diſpute, and as ſoon as he was perceived order would be immediately reſtored. If he ſurpriſed them in the act of aſſaulting each other, he would firſt ſeparate and then chaſtiſe them on the ſpot. Another proof I had of his dominion over his poſterity was, that having accuſtomed them to retire into their place upon the blowing of a whiſtle, whenever I gave the ſignal, how diſtant ſoever they might be, this old one put himſelf at their head, and though he came firſt he made them all paſs before, nor would he enter till laſt himſelf. I fed them with wheat, bran, hay, and a good deal of the juniper-tree; of this laſt they ate all the berries, the leaves, and the bark, and left nothing but the hard food. This food gave their fleſh an agreeable flavour, and rendered it as good as that of the wild rabbits."

Theſe animals live eight or nine years; and as they paſs the greater part of their lives in burrows, where they remain in repoſe and tranquility, they grow much fatter than hares. Their fleſh is alſo very different, both in colour and

and taſte. That of the young rabbit is very delicate, but the fleſh of the old ones is always hard and dry. They were originally, as I have already obſerved, natives of hot climates. They were known to the Greeks; and it appears that the only countries in Europe where they anciently exiſted were Greece and Spain. From thence they were brought into the more temperate climates of Italy, France, England, and Germany, where now they are naturalized; but in colder climates, as Sweden, and other northern parts, they can ſcarcely be reared in the houſe, and periſh if they are left in the fields. On the contrary, they thrive in exceſſive heat, for we meet with them in the ſouthern parts of Aſia and Africa, as about the Perſian Gulph, the Bay of Saldana, in Libia, Senegal, and Guinea. We alſo meet with them in our American iſlands, whither they have been tranſported from Europe, and have thriven extremely well.

CHAPTER IV.

OF CARNIVOROUS ANIMALS.

HITHERTO we have only treated of uſeful animals. Thoſe which ſeem injurious are a far greater number; and though it univerſally appears that what is hurtful exiſts in greater plenty than what is ſerviceable, yet, as in the phyſical world, evil is ſubſervient to good, ſo there can, in fact, be no evil, ſince nothing, in effect, injures Nature. If to deſtroy animated beings is hurtful, is not man conſidered as forming a part of the general ſyſtem of thoſe beings, the moſt injurious and pernicious of them? He alone ſacrifices and annihilates more living individuals than all the carnivorous tribes. No farther, then, are they injurious than as the rivals of man, as they have the ſame appetites, the ſame fondneſs for animal food; and as, to ſatisfy a want of the moſt urgent neceſſity, they occaſionally diſpute with him for that prey which he had reſerved for

for his own exceſſes; for more does man ſacrifice to his intemperance than to his real wants. Born to deſtroy thoſe beings which are ſubordinate, he would exhauſt Nature, if ſhe was not exhauſtleſs, and by a fertility, ſuperior to his depredations, renovates the deſtruction he continually makes. But it is ſo ordained that death ſhould contribute to life, and that reproduction ſhould ſpring from deſtruction. However great, therefore, may be the waſte made by man and carnivorous animals, the total quantity of living matter is never diminiſhed, and if they haſten deaths they are alſo the cauſe of new births being produced.

Large animals form but the ſmalleſt part of animated nature. The earth ſwarms with the ſmaller kinds. Each plant, each grain, each particle of organic matter, contains millions of living atoms. Vegetables appear to be the firſt fund of ſubſiſting Nature; but this fund, however abundant and inexhauſtible, would hardly be ſufficient for the ſtill more abundant tribes of inſects. Their increaſe, altogether as numerous, and often more quick, than the reproduction of plants, is a ſufficient indication of their ſuperior numbers. Plants are only reproduced once a year, whereas in inſects, eſpecially

eſpecially among the ſmaller ſpecies, one ſeaſon gives birth to ſeveral generations. They would multiply, then, more than plants, if they were not devoured by other animals. Among inſects; there are numbers which live upon other inſects; there are ſome, as the ſpiders, which devour with indifference their own as well as other ſpecies; they ſerve for food to the birds; and fowls, both wild and tame, are deſtined for the nouriſhment of man, or the prey of carnivorous animals. Thus violent deaths ſeem eſtabliſhed to be as equally neceſſary as natural ones; they are both modes of deſtruction and renovation; the one ſerves to preſerve nature in a perpetual ſpring, and the other maintains the order of her productions, and limits the number of each ſpecies. They are both effects dependent upon general cauſes; every individual falls of itſelf at the end of a certain period, or if prematurely deſtroyed it was from being ſuperabundant. How many are there whoſe exiſtence is, as it were, anticipated? How many flowers are cut down in the ſpring? How many ſeeds are annihilated before their developement? Man and carnivorous animals feed upon individuals which are either formed, or nearly ſo; fleſh, eggs, grain, and ſeeds of every ſpecies, form their

uſual nouriſhment, by which alone the exuberance of Nature might be reſtrained. Let us conſider any of the interior ſpecies which ſerve as food to others; herrings, for example, preſent themſelves in millions to our fiſhermen, and after having fed all the monſters of the northern ſeas they contribute to the ſubſiſtence of all the nations in Europe for a certain part of the year. If prodigious numbers of them were not deſtroyed, what would be the effects of their prodigious multiplication? By them alone would the whole ſurface of the ſea be covered. But their numbers would ſoon prove a nuiſance; they would corrupt and deſtroy each other. For want of ſufficient nouriſhment their fecundity would diminiſh; by contagion and famine would they be equally deſtroyed; the number of their own ſpecies would not be increaſed, but the number of thoſe that feed upon them would be diminiſhed. As this remark is alike applicable to any other ſpecies, ſo it is neceſſary they ſhould prey upon each other; the killing of animals, therefore, is both a lawful and innocent cuſtom, ſince it is founded in nature, and it is upon that ſeemingly hard condition they are brought into exiſtence.

The motives, however, which incline us to entertain doubts of this truth do honour to humanity.

humanity. Animals, thoſe at leaſt which have ſenſes, and are compoſed of fleſh and blood, are, like us, capable of pleaſure, and ſubject to pain; it is, therefore, a cruel inſenſibility to ſacrifice, without neceſſity, thoſe who approach or live with us, and whoſe feelings are reflected by the ſigns of pain; for by thoſe, whoſe nature is very different to ours, we can be but little affected. Natural pity is grounded on the relations we have with the object that ſuffers, and it is more or leſs lively as the reſemblance and conformity of the ſtructure is more or leſs great. The word compaſſion indicates that we ſuffer, that we are acted upon. The mind partakes leſs of this pity than the body; and animals are ſuſceptible of it as well as man; the voice of pain moves them, they run to the aſſiſtance of each other, and they ſhrink from the dead carcaſe of one of their own ſpecies. Thus horror and pity are leſs paſſions of the mind than natural affections, which depend on the ſenſibility of the body, and on the ſimilitude of its conformation; therefore this ſentiment muſt diminiſh in proportion as the nature of one animal differs from that of another. When we ſtrike a dog, or kill a lamb, it excites ſome pity; but none do we feel in cutting down a tree, or ſwallowing an oyſter. Thoſe animals,

whoſe organization is ſimilar to ours, muſt experience ſimilar ſenſations and thoſe ſenſations muſt be proportioned to the activity and perfection of their ſenſes; thoſe whoſe ſenſes are obtuſe cannot have exquiſite feelings, and thoſe who are defective in any organ of ſenſe, muſt alſo be defective in all the ſenſations which have any affinity thereto. Motion is a neceſſary effect of the exerciſe of ſentiment. We have already evinced, (in treating of the nature of animals) that in whatever manner a being is organized, if it has ſentiment, it cannot fail to expreſs its feelings by outward motions. Thus plants, though rightly organized, are inſenſible beings, as well as all animals which have no apparent motion; thoſe animals alſo which, like the ſenſitive plant, move only their bodies and are denied progreſſive motion, have a very ſmall degree of ſentiment; and, in fine, thoſe which are capable of progreſſive motion, but whoſe actions are, like ſo many automatons, very few and always the ſame, have but a ſmall portion of ſentiment, and that limited to a few objects. There are numerous automatons in the human ſpecies: education and the reſpective communication of ideas augment the quantity as well as the vivacity of our ſentiments. In this reſpect how great is the difference between

the

the civilized man and the ſavage? In the like manner it is with animals; thoſe that live in a domeſtic ſtate, by their intercourſe with man, have their feelings improved; while thoſe who remain wild poſſeſs only the ſenſibility they inherit from Nature, which is often more certain, but always leſs in quantity than that which is acquired.

Beſides, if we conſider ſentiment as a natural faculty, independent of the movements which it neceſſarily produces, we may ſtill be able to eſtimate and determine its different degrees by phyſical relations, to which ſufficient attention does not ſeem to have been hitherto paid. Before the higheſt degree of ſentiment can exiſt in an animated body it is neceſſary that this body ſhould form a whole, not only ſenſible in all its parts, but ſo compoſed that all theſe parts ſhould have an intimate correſpondence with each other, inſomuch that one cannot be agitated without communicating a portion of that agitation to all the reſt. It is alſo neceſſary there ſhould be one common centre in which the agitations may terminate, and on which the re-action of every movement may be performed. Thus man, and thoſe animals which reſemble him moſt in organization, will be the moſt ſenſible beings. Thoſe, on the contrary, who do not

not form ſo complete a whole, whoſe parts have a leſs intimate correſpondence, who have ſeveral centres of feeling, and under one cover ſeem leſs to compriſe a perfect animal, than to contain ſeveral centres of exiſtence ſeparate from each other, will be beings far leſs ſenſible. The pieces of a polypus, which has been cut, live ſeparately; the head of a waſp, which is divided from the body, lives, moves, and even eats as before; a lizard, when cut in two, is neither deprived of motion nor feeling; the amputated limbs of a lobſter are renewed; the heart of a turtle beats for a long time after it is taken out of the body; all thoſe inſects, in which the principal viſcera, as the heart and lungs, do not unite in the centre, extend throughout the body, and form, as it were, a ſeries of hearts, and other viſcera; all fiſhes, whoſe organs of circulation have but little action; in ſhort, all animals, whoſe organization is more or leſs remote from ours, have more or leſs ſentiment.

In man, and in the animals which reſemble him, the diaphragm appears to be the centre of ſentiment; it is on this nervous part the impreſſions of pain and pleaſure are directed; it is on that all the movements of the ſenſitive ſyſtem are exerciſed. The diaphragm, in a

tranverſe

tranverſe form, divides the body into two equal parts, of which the ſuperior contains the heart and lungs, and the inferior the ſtomach and the inteſtines. This membrane is poſſeſſed of the utmoſt ſenſibility; it is alſo ſo neceſſary for the propagation and communication of feeling, that the ſlighteſt injury of it is always accompanied with convulſions, and often with death. The brain, which is conſidered as the ſeat of ſenſation, is not, therefore, the centre of ſentiment, ſince it may be wounded, and even parts of it removed without cauſing the death of the animal. Let us then diſtinguiſh ſenſation from ſentiment. Senſation is nothing more than an agitation, or impreſſion, on the ſenſe, whereas ſentiment is this very ſenſation rendered agreeable or diſagreeable by the propagation of the agitation through the ſenſitive ſyſtem, for the eſſence of ſentiment, its ſole characteriſtic is pleaſure or pain, and all other movements, notwithſtanding they paſs within us, are totally indifferent, nor do they affect us. It is on ſentiment that the whole exterior movements, and the exerciſe of animal force depend; it acts only in proportion as it feels, and the very part which we conſider as the centre of ſentiment is alſo the centre of force.

A ſlight

A ſlight examination will ſhew us that all lively emotions, whether of pain or pleaſure, in a word, all ſenſations, whether agreeable or diſagreeable, are felt internally in the region of the diaphragm. On the contrary, there is no token of ſentiment in the brain; in the head there are none but pure ſenſations; we only recollect that this or that ſenſation has been agreeable or diſagreeable; and if this operation in the head is followed by a lively and real ſentiment, then we feel the impreſſion of it within the region of the diaphragm. Thus the fœtus, where this membrane is without exerciſe, is without ſentiment, and the little motions of the fœtus may therefore rather be conſidered as mechanical, than dependent either on ſenſation or on the will.

Whatever may be the ſubſtance which ſerves as the vehicle of ſentiment, and produces muſcular motion, it is certainly propagated by the nerves, and is communicated in an indiviſible inſtant from one extremity to the other. In whatever manner this motion may be effected, (whether by vibrations, as in elaſtic fibres, or by a ſubtile fire, ſimilar to that of electricity, which not only reſides in animated, and in all other bodies, but is conſtantly regenerated in the

the former by the motion of the heart and lungs, by the action of the blood in the arteries, and alſo by that of exterior cauſes on the organs of ſenſe) certain it is that the nerves and membranes are the only ſenſible part of the animal body. The blood, the lympha, the fat, the bones, the fleſh, and all other ſolids and fluids, are of themſelves inſenſible; the brain is a ſoft and unelaſtic ſubſtance, and on that account incapable of producing or propagating the vibrations of ſentiment.

What may have given riſe to the opinion that the brain was the ſeat of ſenſation, and the centre of ſenſibility, is the circumſtance that the nerves, which are the organs of ſenſation, terminate in the brain; for which reaſon it was conſidered as the only part that could receive every agitation or impreſſion. This ſuppoſition appeared ſo ſimple, and ſo natural, that no attention was paid to the phyſical impoſſibility that attends it though abundantly evident; for how is it poſſible that a ſoft and inſenſible ſubſtance ſhould not only receive impreſſions, but retain them for a length of time, and propagate all their agitations over the ſolid and ſenſible parts? Perhaps it will be anſwered after Deſcartes and Peyronie, that it is not in the brain, but in the pineal gland that

this principle of ſenſation reſides; but it is very eaſily diſtinguiſhed that neither the pineal gland, nor cartical ſubſtance, have any connection with the nerves, but are ſurrounded with the inſenſible ſubſtance of the brain, and ſo ſeparated from the nerves that they cannot receive the motions of them, and therefore theſe ſuppoſitions, like the former, muſt fall to the ground. But what, in this caſe, is the uſe and functions of this very noble and principal part of the body? Is not the brain to be found in every animal? Do we not find it larger in man, quadrupeds, and birds, which have all much ſentiment, than in fiſhes, inſects, and other animals which have but little thereof? When compreſſed, is not all motion ſuſpended? Does not every action ceaſe? If this part is not the principle of motion, why is it ſo eſſentially neceſſary to it? Why is it proportioned, in every ſpecies of animals, to the quantity of ſentiment with which they are endowed?

However difficult theſe queſtions may appear, I think it is eaſy to anſwer them ſatisfactorily. By an attentive and deliberate examination, the brain, as well as the ſpinal marrow, (which is nothing more than a prolongation of it) is a kind of mucilage, hardly organized. We diſtinguiſh in it only the extremities

extremities of the little arteries, which terminate there in great numbers, and carry no blood but a white and nutritive lympha; theſe ſmall arteries, or lymphatic veſſels, when diſunited from the brain by maceration, appear in the form of very ſlender fibres. The nerves, on the contrary, never penetrate the ſubſtance of the brain, but only reach the ſurface of it, but previous to which they loſe their ſolidity and elaſticity, and their extremities next the brain are ſoft, and almoſt mucilaginous. From whence it appears that the brain, which is nouriſhed by the lymphatic arteries, furniſhes in its turn nouriſhment to the nerves, which we ought to conſider as a kind of vegetable ſubſtance, that ſhoots forth from the brain, and is divided into an infinity of branches. The brain is to the nerves what the ſoil is to plants; the extremities of the nerves are the roots, which, as in every vegetable, are more ſoft, and tender than the trunk or branches; they contain a ductile matter proper for the growth and nouriſhment of the tree; and this ductile matter they derive from the ſubſtance of the brain, to which the arteries continually direct the lympha neceſſary for its ſupply. The brain, therefore, inſtead of being the ſeat of ſenſation, the principle of ſentiment, is only an

organ of ſecretion and nutrition, but it is an organ which is highly eſſential, and without which the nerves could neither grow nor be preſerved.

The brain is alſo larger in man, quadrupeds, and birds, becauſe in them the quantity of nerves is greater than in fiſhes and inſects, which on this very account have very little ſentiment. And here I cannot help remarking, that man has not a proportionably larger brain than any other animal. There are ſpecies of apes, and of cetaceous animals, which, proportioned to the ſize of their bodies, have more brains than man; another fact which proves that the brain is neither the ſeat of ſenſation, nor the principle of ſentiment, ſince were it ſo thoſe animals would have more ſenſations, and more ſentiment, than man. By obſerving plants we ſhall perceive that they do not abſorb the groſs parts of earth or water, and that theſe muſt firſt be reduced by heat into tenuous vapours. In like manner the nerves are nouriſhed by the ſubtle moiſture of the brain, which is received by their extremities or roots, and thence carried into all the branches of the ſenſitive ſyſtem. This ſyſtem, as we have already remarked, forms an individual whole, of which the parts have ſo

cloſe

cloſe a connection that one cannot be wounded without injuring all the reſt. The ſlighteſt irritation of the ſmalleſt nerve is ſufficient to throw the whole body into a convulſion, nor is it poſſible to cure the pain, or remove the convulſion, but by cutting away the nerve above the injured part, and then all the parts to which this nerve joined become at once motionleſs and inſenſible. The brain ought not to be conſidered as an organic part of the nervous ſyſtem, becauſe it differs both in properties and ſubſtance, and is neither ſolid, elaſtic, nor ſenſible. I own that, when compreſſed, a ſtop is put to ſenſation; but this proves it a body foreign to the ſyſtem, which, from acting with a weight on the nerves, benumbs them in the ſame manner, as a heavy weight, applied to the arm or leg, deadens the feeling; and this is evident, becauſe the moment the compreſſion is removed ſentiment revives, and the motion is re-eſtabliſhed. I alſo own, that, by injuring the brain, convulſions, and even death, will enſue, but theſe effects are produced from the nerves being injured in their very ſource. To theſe reaſons I might add particular facts, which would alſo prove that the brain is neither the centre of ſentiment nor the ſeat of ſenſation. There have been animals,

animals, and even children, born without either head or brain, yet endowed with ſentiment, motion, and life. In inſects and worms the brain is not perceptible, having only a part which correſponds with the ſpinal marrow, and therefore the ſpinal marrow might more reaſonably be ſuppoſed the ſeat of ſenſation, being common to all animals, which the brain is not.

The obſtacle to the advancement of human knowledge, lies not ſo much in the things themſelves, as in our manner of conſidering them. However complicated the body of man may be, his ideas are more ſo. It is leſs difficult to underſtand Nature as ſhe is, than comprehend her as ſhe is repreſented. She has only a veil, but we give her a maſk, and conceal her with prejudices; and we ſuppoſe ſhe acts and operates as we act and think; but her actions, however, are evident, and our thoughts are obſcure; her deſigns and operations are always uniform and certain, which we ſeem to confound with the variable illuſions of our own imaginations. I ſpeak not merely of arbitrary ſyſtems and imaginary hypotheſes, but of the methods by which we generally ſtudy Nature. Even experiment, although the moſt certain method, has been productive of more error than

than truth; as the ſmalleſt deviation leads to barren wilds, or exhibits a glimpſe of obſcure objects; to which affinities and properties are aſcribed, and thoſe ſteps being followed by the whole world, the conſequences derived from them are admitted as fixed principles. Of this I might give a proof by expoſing what are called principles in all the ſciences, both abſtract and real. In the former the general baſis of principle is abſtraction, or one or more ſuppoſitions; in the latter principles are nothing more than conſequences, whether true or falſe, of the methods which we have adopted. To inſtance only Anatomy; muſt not the firſt man who ſurmounted the natural repugnance, and ventured to open a human body, ſuppoſe that by diſſecting and examining all its parts, he ſhould obtain a knowledge of its ſtructure, mechaniſm and functions? but finding the ſubject more complicated than he had imagined, he was obliged to renounce thoſe pretenſions, and to adopt a method, not by which he might know and judge, but by which he might view the parts in a certain order. This method however was not to be acquired by one man, but has occupied the attention of ages, and even of our ableſt anatomiſts to the preſent day, and even when acquired it is not ſcience, but the road

road which leads to it; and which might have done ſo, if inſtead of keeping within the narrow and beaten track, anatomiſts had extended the path, by comparing the human body with that of other animals; for does not the foundation of all ſcience conſiſt in a compariſon of ſimilar and different objects, of their analagous and oppoſite properties, and of all their relative qualities? And hence it is, that although human bodies have been diſſected for three thouſand years, anatomy ſtill remains nothing more than a nomenclature, and hardly any advances have been made towards the real object, the knowledge of the animal economy; in which Nature certainly appears very myſterious, not only becauſe the ſubject is complicated, but becauſe, having neglected thoſe modes of compariſon which alone could have afforded us any light, we have been immerſed in the obſcurity of doubt, or bewildered in the labyrinth of vague hypotheſes. We have millions of volumes deſcriptive of the human body, while the ſtructure of animals has been almoſt entirely neglected. The moſt minute parts of man have been named and deſcribed, and yet we know not whether thoſe parts are to be found in other animals. Certain functions have been aſcribed to certain organs, without knowing

ing whether thoſe functions cannot be exerciſed by other beings though deprived of thoſe organs; inſomuch that in all the explications relative to the animal economy, we labour under the double diſadvantage of firſt engaging in a complicated ſubject, and then reaſoning on it without the aſſiſtance of analogy. Through the whole courſe of this work we have followed a different method; conſtantly comparing Nature with herſelf, we have conſidered her relatively and in her moſt diſtant extremes; and it will be eaſily perceived that, after all our labour to remove falſe ideas, deſtroy prejudices, and to ſeparate realities from arbitrary opinions, the only art we have employed is compariſon. If we have been enabled to throw any light upon theſe ſubjects, leſs is to be attributed to genius than method, and which we have endeavoured to render as general as our knowledge would permit.

Having hitherto avoided giving general ideas, until we had preſented the reſults of particular operations, we ſhall now content ourſelves with collecting certain facts which will ſuffice to prove that man, in a ſtate of nature, was not calculated to live upon herbage, grain, or fruits; but that at all times, with the greateſt part of other animals, he ſought to feed on

fleſh. The Pythagorean diet, ſo highly extolled by ſome ancient and modern philoſophers, and even recommended by certain phyſicians, was certainly not preſcribed by Nature. In the golden age, man, as innocent as the dove, ſought for no nouriſhment but acorns of the foreſt, and pure water of the ſtream. Surrounded with ſubſiſtence, he was free from inquietude, lived independent, and at peace with himſelf and other animals; but loſing ſight of his dignity, he ſacrificed his liberty to the union of ſociety, and exchanged a life of repoſe for tumultuous warfare. Of his nature thus depraved, the firſt fruits were an appetite for fleſh and blood; and this depravity the invention of arts and manners ſerved to complete. Thus have ſavage and auſtere philoſophers, in all ages, reproached the civilized part of mankind. Flattering their own pride, at the expence of their ſpecies, they have preſented a picture which has no value but from the contraſt it exhibits. Did this ſtate of ideal innocence, of perfect temperance, of entire abſtinence from fleſh, of profound peace and tranquillity ever exiſt? Is it not a fable in which man, like an animal, has been employed to convey moral leſſons? Can virtue have ſubſiſted before ſociety? Can the loſs of our ſavage nature

ture merit regret? or can man, in a wild ſtate, be conſidered as a more worthy being than the civilized citizen? Yes, for all miſery ariſes from ſociety; and what ſignifies what virtue he poſſeſſed in that ſtate, if he was more happy than he is now. Are not liberty, health, and ſtrength, preferable to effeminacy, ſenſuality, and voluptuouſneſs, accompanied with ſlavery? The abſence of pain is at leaſt equal to the enjoyment of pleaſure, and to be completely ſo, is to have nothing to deſire. If theſe obſervations were juſt, why do they not tell us it is better to vegetate than to live, to have no appetites than to gratify them, to ſleep through life, in a perfect apathy, than to open our eyes to ſee and feel; that, in ſhort, it is better to be ſo many inanimate maſſes attached to the earth, than be capable of enjoying thoſe benefits Nature ſo bountifully beſtows?

But, inſtead of diſcuſſing, let us advert to facts: Is the ſavage inhabitant of the deſart a tranquil animal? Is he a happy man? For we cannot ſuppoſe, with a certain philoſopher, (Rouſſeau) that there is a greater diſtance between a ſavage and a man in a pure ſtate of nature, than between a ſavage and ourſelves; that the ages before man acquired the uſe of ſpeech were more than thoſe in which

languages were brought to perfection. In reaſoning upon facts all ſuppoſitions ought to be thrown aſide, until every thing preſented by Nature is examined. In doing this we ſhall deſcend from the moſt enlightened to a people which are leſs ſo; from thoſe to others yet more rude, but ſtill ſubject to kings and laws; from theſe to ſavages, among whom there are as many ſhades as in the civilized nations; ſome of them we ſhall find forming nations ſubject to chiefs; others, in ſmaller bodies, governed by certain cuſtoms; and others, the moſt ſolitary and independent, united in families, and ſubmitting to their fathers. Thus an empire and a monarchy, a family and a father, are the two extremes of ſociety; and theſe extremes are likewiſe the limits of Nature; for if they extended further in traverſing the different ſolitudes of the earth we muſt have found theſe human creatures void of ſpeech, the males ſeparated from the females, the children abandoned, &c. In contradiction to this, I however aſſert, that it is impoſſible to maintain that man ever exiſted without forming families, becauſe the children muſt inevitably have periſhed had they not been attended for ſeveral years. This phyſical neceſſity alone is a ſufficient demonſtration that the

the human ſpecies could neither multiply nor exiſt without ſociety, and that the attachment of parents to their children is natural: this attachment was alſo ſufficient to habituate them to certain ſigns and ſounds, and to accuſtom them to the expreſſions of ſentiment and deſire; of this we are convinced by the facts that the moſt ſolitary ſavages have the uſe of ſigns and ſpeech. Thus we know the pure ſtate of nature is that of a ſavage living in a deſart with his family, knowing his children, and being known by them, uſing words, and making himſelf underſtood. Neither do the ſavage girl, found in the woods of Champagne, nor the wild man, in the foreſts of Hanover, prove any thing to the contrary. They had lived in abſolute ſolitude, and therefore could have no idea of ſociety, or of words; but had they met Nature would have prompted an attachment, which attachment would ſoon have taught them to make themſelves underſtood; they would firſt have learned the language of love, and then that of tenderneſs for their offspring. Beſides theſe muſt have ſprung from parents living in ſociety, and left by them at the age of four or five years, at leaſt when they had ſufficient ſtrength to procure ſubſiſtence, though too feeble to retain the ideas, which

which might have been communicated to them.

Let us, then, examine this man in a pure ſtate of nature, that is, this ſavage living as the head of a family; if the family proſpers he ſoon becomes chief of a numerous body, obſerving the ſame cuſtoms, and ſpeaking the ſame language; at the third or fourth generation they will become a ſmall nation, which, increaſing by time, will either be formed into a civilized people, or remain in a ſavage ſtate, as circumſtances may concur. If they reſide in a mild climate, and a fertile ſoil, where they meet with nothing but deſarts, or people like themſelves, they will remain in their priſtine ſtate, and, according to circumſtances, become friends or enemies to their neighbours. But if under a ſevere climate, and pinched for want of ſuſtenance, or room, they will make irruptions, form colonies, and blend themſelves with other nations, of which they will either become the conquerors or ſlaves. Thus man, in every ſituation, and in every region, ſtill aims at ſociety; it is, indeed, an uniform effect, of a neceſſary cauſe, ſince without it the propagation, and, of courſe, the exiſtence, of mankind would ceaſe.

Thus

Thus we plainly ſee ſociety is founded in Nature; and upon examining, in the ſame manner, the appetites of ſavages, we ſhall find that none of them live ſolely on fruits, herbs, or grain; that they all prefer fleſh and fiſh to other food, and that inſtead of preferring pure water, they endeavour to make for themſelves, or procure from others, a beverage leſs inſipid. The ſavages of the ſouth drink the juice of the palm-tree; thoſe of the north take large draughts of whale oil; others produce fermented liquors, and they all poſſeſs a paſſionate fondneſs for ſtrong liquors. Their induſtry, dictated by neceſſity, and excited by natural appetite, amounts to nothing more than forming a few inſtruments for hunting and fiſhing. A bow and arrows, a net and canoe, are the ſole produce of their arts, and are all for the purpoſe of procuring food ſuitable to their palates. And what is ſuitable to their palate muſt correſpond with Nature; for, as we have already remarked, in the hiſtory of the ox, man, having but one ſtomach, is not formed to live on herbage alone; nor would he be much better ſupplied from grain, notwithſtanding it has been highly improved by art, and contains more nutritive particles than when poſſeſſed only of their relative qualities; yet if man received

ceived no other food he would with difficulty drag on a feeble and languiſhing exiſtence.

If we view thoſe enthuſiaſtic ſolitaries, who abſtain from every thing that has had life, who, from religious motives, renounce the gifts of the Creator, ſhun ſociety, and ſhut themſelves up in thoſe conſecrated walls, at the very idea of which Nature recoils. Confined in theſe tombs ſet apart for the living, they draw on, for a very few years, a feeble and uſeleſs exiſtence, and when the hour of diſſolution comes, it may be ſaid to be that in which they ceaſed to die. If man were reduced to abſtain from fleſh, at leaſt in theſe climates, he could neither ſubſiſt nor multiply. Perhaps this diet might be poſſible in ſouthern countries, where the fruits arrive at greater maturity, where the plants are more ſubſtantial, and the roots more ſucculent. The Brahmans, nevertheleſs, form rather a ſect than a people, and their religion, though very ancient, has never extended beyond one climate. This religion, founded upon metaphyſics, is a ſtriking example of the fate of human opinions. From the ſcattered remains we may plainly perceive that the ſciences have been cultivated from great antiquity, and carried perhaps to a greater degree of perfection than they are at this day. It was well known in ancient

ancient times that all animated beings contained living and unperiſhable particles, which paſſed from one body to another. This truth, which was adopted by a few philoſophers, and afterwards generally received, could only retain its purity during the enlightened ages, and a revolution of darkneſs ſucceeding, nothing more of them was remembered but juſt enough to countenance the opinion, that the living principle of the animal was an unperiſhable whole, which ſeparated from the body after death. To this viſionary whole they gave the name of ſoul, which was ſoon ſuppoſed to exiſt in all animals; and they afterwards maintained, that after death, what they thus termed ſoul, perpetually tranſmigrated from one body to another. Man was not excepted from the tenets of this doctrine; and blending morals with metaphyſics, they aſſerted that this ſurviving being retained in its tranſmigrations all its former ſentiments, affections, and deſires. Credulity trembled, and they contemplated with horror the idea that on quitting its preſent agreeable abode the ſoul would become the inhabitant of a noiſome animal. Fear being the forerunner of ſuperſtition they began to entertain freſh alarms, and dreaded, leſt in killing an animal, they ſhould deſtroy

the miſtreſs they had loved, or the parent which had given them being; every beaſt they began to regard as a relation or neighbour, till at laſt, from motives of love and duty, they were obliged to abſtain from every thing that had life. Such is the origin and progreſs of the moſt ancient religion in India.

But to return to our ſubject. An entire abſtinence from fleſh can only ſerve to enfeeble Nature. Man, to enjoy health, ought not only to uſe this ſolid nouriſhment, but even to vary it; to acquire complete vigour he muſt chuſe that which is moſt agreeable to him, and, as he cannot continue in an active ſtate without procuring new ſenſations, ſo he muſt indulge himſelf with a variety of eatables to prevent the diſguſt that would follow an uniformity of nouriſhment, being careful, however, to avoid exceſs, which is ſtill more injurious than abſtinence. Animals which have but one ſtomach, and whoſe inteſtines are ſhort, are forced, like man, to feed on fleſh, and, therefore, by an examination of the various animals, it will appear, that their difference in food ariſes from their conformation, and that their nouriſhment is more or leſs ſolid as their ſtomachs are more or leſs capacious. But it muſt not from this be concluded, that animals,

which

which feed on herbs are under a phyſical neceſſity of feeding on them alone, although carnivorous animals cannot exiſt without fleſh: we only mean it to be underſtood, that thoſe which have ſeveral ſtomachs can be ſupported without ſuch ſolid food; not but they might make uſe of it if Nature had furniſhed them with talents to ſeize on prey, ſince we find ſheep, calves, goats, and horſes, greedily eat milk and eggs, and do not refuſe even meat which has been ſeaſoned with ſalt; it may, then, be ſaid, that a taſte for fleſh is a predominant appetite in all animals, and that it is more or leſs vehement, or moderate, according to their particular conformation, ſince we find it not only in man and quadrupeds, but in fiſhes, inſects, and worms; for the latter of which, indeed, all fleſh ſeems to be ultimately deſtined.

In animals nutrition is performed by organic particles, which, ſeparated from the groſs maſs of food by digeſtion, mingle with the blood, and aſſimilate with all parts of the body. But, independent of this principal effect ariſing from the quality, there is another which depends on the quantity of the food The ſtomach and inteſtines are ſupple membranes, which occupy a conſiderable ſpace in the body, and which

to preſerve their tenſe ſtate, and to counterbalance the force of the adjoining parts, require to be always in ſome meaſure filled. If for the want of nouriſhment this ſpace happens to be entirely empty, then the membranes, having no longer an inward ſupport, bear down upon and adhere to each other, and theſe give riſe to all the oppreſſions and weakneſs of extreme want. Food, therefore, as well as contributing to the nouriſhment of the body, ſerves as a kind of ballaſt to it. Its preſence and quantity are equally neceſſary to preſerve an equilibrium; and when a man dies for hunger, it is not more for want of nouriſhment than from not having a proper poiſe to the body. Thus animals, eſpecially the moſt voracious, are ſo eager to fill up the vacancy within them that they will ſwallow even earth and ſtones. Clay has been found in the ſtomach of a wolf, hogs eat it very greedily, and moſt birds ſwallow pebbles, &c. Nor is this from taſte but neceſſity, for the moſt craving want is not to refreſh the blood by a new chyle, but to maintain an equilibrium of the forces in the grand parts of the animal machine.

THE WOLF.

THE Wolf is one of thoſe animals whoſe appetite for animal food is very ſtrong. Nature has furniſhed him with various means for ſatisfying this appetite, and yet though ſhe has beſtowed on him ſtrength, cunning, agility, and all the neceſſary requiſites for diſcovering purſuing, ſeizing, and devouring his prey, he not unfrequently dies with hunger; for man having become his declared enemy, and put a price upon his head, he is obliged to take refuge in the foreſts, where the few wild animals he can meet with eſcape him by the ſwiftneſs of their courſe, and whom he cannot ſurpriſe in ſufficient quantities to ſatisfy his rapacity. He is naturally dull and cowardly, but becomes ingenious from want, and courageous from neceſſity. When preſſed with hunger he braves danger; he attacks thoſe animals which are under the protection of man, particularly

ticularly ſuch as he can eaſily carry away, as lambs, kids, and even ſmall dogs; if he ſucceeds in theſe excurſions, he often returns to the charge, till being wounded and cloſely purſued by dogs and men, he conceals himſelf during the day in his den, and only ventures out at night, when he traverſes the country, ſearches round the cottages, kills ſuch animals as have been left without, ſcratches up the earth from under the barn-doors, enters with a barbarous ferocity, and deſtroys every living thing within, before he begins to fix upon, and carry off his prey. Should theſe ſallies not ſucceed, he returns to the foreſts and purſues with avidity any animal he can meet, nay he will even follow the tract of large animals in hopes they may be ſeized and deſtroyed by ſome other, and that he may become a partaker of the ſpoil. When his neceſſities are very urgent he will face deſtruction; he attacks women and children, and will ſometimes dart upon men; in a word he becomes furious by his continual agitations and ends his life in madneſs.

The wolf both externally and internally, ſo nearly reſembles the dog, that he ſeems modelled upon the ſame plan; and yet if his form is ſimilar, his nature is totally different, and ſo unlike are they in diſpoſition, that no two animals

mals can have a more perfect antipathy to each other. A young dog ſhudders at the ſight of a wolf, and even the ſcent of one, though new and unknown, is ſo repugnant to his nature that he will come trembling to his maſter for protection. A powerful dog, who knows his own ſtrength, teſtifies his animoſity, attacks him with courage, endeavours to put him to flight, and uſes every exertion to get rid of an object whoſe preſence is hateful. They never meet without its terminating in flight or death: If the wolf proves ſtrongeſt he tears and devours his prey; but the dog is more generous and contents himſelf with victory; he does not even approve the ſmell of the body of a dead enemy, but leaves him as food for the ravens, or even other wolves; for they eat the carcaſſes of each other; and if one wolf happens to be much wounded, a number of them will track him by his blood and ſpeedily diſpatch him.

The dog, even in his wild ſtate, is not cruel, he is eaſily tamed, and continues firmly attached to his maſter. The young wolf may be tamed, but never has any attachment. Nature in him is ſtronger than education; he reſumes, with age, his ferocious diſpoſition, and returns as ſoon as he can to his ſavage ſtate. Dogs, even of the dulleſt kind, ſeek other animals and are naturally

naturally diſpoſed to accompany them; and by inſtinct alone, without any education, they take to the care of flocks and herds. The wolf, on the contrary, is the enemy of all ſociety: he does not aſſociate even with thoſe of his own ſpecies; when ſeveral are ſeen together it is not to be conſidered as a peaceful ſociety, but a combination for war; their fierceneſs and loud howlings denote they intend an attack upon ſome large animal, as a ſtag, ox, or formidable dog. The inſtant their military expedition is over, they ſeparate, and each returns in ſilence to his ſolitary retreat. There is not any ſtrong attachment between the males and females; they ſeek each other but once a year, and then remain but a few days together. They always couple in winter; ſeveral males will follow one female, and this aſſociation is more bloody than the former, for they growl, fight, and tear one another, and the majority will frequently kill him that has been preferred by the female. It is uſual for the ſhe wolf to fly her admirers a long time, and at laſt retire with the one ſhe has choſen when the reſt are all aſleep. The female does not continue in ſeaſon above twelve or fifteen days, the oldeſt are generally ſo firſt. The males have no fixed time, but paſs from one female to another from the end of December

to

to the end of February. The time of going with young is about three months and a half, and young whelps are found from the end of April till the beginning of July. This difference in the time of geſtation between the ſhe-wolf, who goes above an hundred days, and the bitch that does not exceed 63, proves that the wolf and dog differ not more in their diſpoſitions than in their temperament, particularly in one of the chief functions of the animal economy; beſides the wolf lives longer than the dog, and the ſhe-wolf breeds but once while the bitch has two or three litters in the year; for theſe, together with the reaſons we have adduced in the hiſtory of the dog, the wolf and the dog cannot be conſidered as the ſame animal; but by the nomenclators of Natural Hiſtory, who have only a ſuperficial knowledge of Nature. The wolf alſo differs from the dog in ſeveral external characteriſtics. The aſpect of the head and form of the bones are not the ſame, the cavity of the eye is obliquely placed in the wolf, the orbits are inclined, his eyes ſparkle in the night, he howls inſtead of barking, his ſtep is more precipitate, yet more uniform, his body is ſtronger but leſs ſupple, his limbs more firm, his jaws and teeth larger, and his hair much coarſer.

When the females are near the time of bringing forth, they ſeek for an agreeable place in the inmoſt receſſes of the foreſt; in the middle of the choſen ſpot, they level a ſmall ſpace, cutting away the thorns and briars with their teeth; they then carry thither a quantity of moſs, which they form into a bed for their young; they generally bring forth five or ſix, though ſometimes eight or nine. The cubs, like puppies, come into the world with their eyes cloſed; the mother ſuckles them for ſome weeks, and ſoon learns them to eat fleſh, by chewing it firſt herſelf; ſome time after ſhe brings them field mice, leverets, partridges, and birds yet alive; the young wolves begin by playing with, and end by killing them, when the dam ſtrips them of their feathers, tears them in pieces, and gives to each of her young a ſhare. They do not leave this den until they are ſix weeks or two months old; they then follow the mother, who leads them to drink in the trunk of ſome old tree, or to a neighbouring pool. If ſhe apprehends any danger, ſhe haſtily conducts them back, or conceals them in ſome convenient place. Though at other times more timorous than the male, yet when her young are attacked ſhe becomes fearleſs, and defends them with fury. She never forſakes them

them until they have ſhed their firſt teeth, and completed their new; when, having acquired talents for rapine, and learned induſtry and courage from her example, ſhe leaves them to ſhift for themſelves, being herſelf about to be engaged in the care of a new progeny.

Both males and females are capable of generating when two years old. It is probable that the female may be more forward than the male; it is, however, certain, that they are not inclined to copulate before the ſecond winter, which neceſſarily implies eighteen or twenty months; a ſhe-wolf, which I reared, diſcovered no ſymptoms until the third winter, when ſhe was more than two years and a half old. Huntſmen aſſert that in every litter there are more males than females, which ſeems to confirm the general remark, that Nature, in all ſpecies, produces more of the former than the latter. From them alſo we learn that ſome of the males attach themſelves to the females, and accompany them until they are about to bring forth, when ſhe ſteals from him, leſt he ſhould devour them immediately after birth; but that when brought forth, he takes the ſame care of them as the female, carries them proviſions, and if the mother happens to be killed, he carefully brings them up. I cannot, however, pre-

tend to vouch for the truth of theſe facts, which appear to me contrary to their natural diſpoſitions.

Theſe animals require two or three years to complete their growth, and live to the age of 15 or 20; another proof of our poſition that the growth takes up one ſeventh part of life. As the wolf grows old he turns grey, and his teeth appear much worn. He ſleeps when full or fatigued, but more by day than night, and is always very eaſily awakened. He drinks frequently, and in times of drought, when there is no water in holes or trunks of trees, he will come to the brooks or rivulets ſeveral times in the day. Although very voracious, he will go four or five days without meat, provided he is well ſupplied with water. He has great ſtrength, particularly in his fore parts, in the muſcles of his neck and jaws. He will carry off a ſheep in his mouth, and at the ſame time outrun the ſhepherds, ſo that nothing but dogs can overtake or oblige him to quit his prey. He bites cruelly, and always with greater vehemence in proportion as he is leſs reſiſted, for with ſuch as can defend themſelves he is cautious and circumſpect. He is cowardly, and never fights but from neceſſity. When wounded by a bullet he will cry out, and yet when

when ſurrounded and attacked by clubs he never complains, but defends himſelf in ſilence, and dies as hard as he lived. He is more ſavage, has leſs ſenſibility, and more ſtrength than the dog. He travels and roams about for nights and days together, and perhaps of all animals is the moſt difficult to be hunted down. The dog is gentle and courageous; the wolf though ſavage is fearful. If entrapped in a pit-fall he is for ſome time ſo frightened and overcome that he may be killed, or taken alive, without offering to reſiſt; he will ſuffer himſelf to be chained, muzzled, and led along without giving the leaſt ſigns of anger or reſentment. His ſenſe of ſmelling is very acute, and the odour of a carcaſs will ſtrike him though at more than a league diſtant; he alſo ſcents living animals a great way off, and will hunt them a long time by following their track. On leaving the wood he always goes againſt the wind, and upon coming to the extremity he ſtops, ſmells on all ſides, and receives the emanations that may come either from his enemies or prey, and which he nicely diſtinguiſhes. He prefers thoſe animals he kills himſelf, but will eat the moſt infected carcaſſes. He is fond of human fleſh, and perhaps was he ſufficiently powerful he would

eat

eat no other. Wolves have been known to follow armies, to go in numbers into the field after the battle, and devour ſuch bodies as lay upon the ſurface, or were negligently interred: when once accuſtomed to human fleſh, they will attack men, preferring the ſhepherd to his flock, devour women, and carry off children.

It ſometimes happens that whole countries are obliged to arm for the purpoſe of deſtroying them. Hunting of them is alſo a favorite diverſion among the great, and is certainly a very ufeful one. Wolves are diſtinguiſhed by huntſmen into young, old, and very old; they are known by the prints of their feet, which are large in proportion to their age; thoſe of the females are longer and more ſlender. It is neceſſary to have a good bloodhound to put up the wolf, and when upon the ſcent every art muſt be uſed to encourage him, as all dogs have a natural antipathy to this animal, and are very cold in the purſuit. When the wolf is put up greyhounds ſhould be let after him in pairs, the firſt pair almoſt immediately ſupported by a man on horſeback; the ſecond when he is at the diſtance of eight or nine hundred paces, and a third pair when the other dogs have come up with and begin to bait him; he keeps them off for a conſiderable time, but the

the hunters coming up generally diſpatch him with their cutlaſſes; when killed the dogs never ſhew the ſmalleſt appetite to enjoy the fruits of their victory. The wolf is ſometimes hunted by harriers, but as he runs ſtraight forward, and will hold his ſpeed for a day together, the chace is very tedious without greyhounds to harraſs and turn him at every view. Several arts have been adopted to deſtroy theſe noxious animals, ſuch as worrying them with large maſtiffs, laying ſnares, digging pits, and ſpreading poiſoned meats, yet their numbers remain nearly the ſame, eſpecially in woody countries. The Britons are ſaid to have extirpated them from their iſland, and yet I am aſſured they are ſtill found in Scotland; as there are but few foreſts in South Britain, their deſtruction there was leſs difficult.

Their colour differs with the climate in which they live, and ſometimes in the ſame country. Beſide the common wolves, in France and Germany, there are others with thicker and yellow coloured hair; theſe, though more ſavage, are leſs deſtructive than the others, as they neither approach flocks nor the habitations of men, but live ſolely by the chace. In the northern climates ſome are found quite black,

and

and others entirely white. The common ſpecies are very generally diffuſed, being found in Aſia, Africa, and America, as well as in Europe. The wolves of Senegal reſemble thoſe of France, except being larger and more fierce; thoſe of Egypt are ſmaller than thoſe of Greece. In the eaſt, particularly in Perſia, the wolf is trained up for a ſhew, being taught to dance, and exhibit a number of tricks; and, according to Chardin, when well taught, a ſingle wolf will ſell for 500 crowns. This fact proves, that by dint of time and reſtraint, theſe animals are ſuſceptible of education. Several which I reared were very docile, and even courteous, during the firſt year, nor ever attempted to ſeize the poultry, or other animals, when properly fed, but when they arrived to 18 months I found it neceſſary to chain them, to prevent their doing of miſchief, or running away. One I had I allowed to range at large among ſome fowls, and he never touched any of them till he was about 18 or 19 months old, when, as a ſpecimen of what he could do, he killed the whole in one night, without eating any of them. I had another which broke his chain and ran off, but not till he had killed a dog with whom he had been very

very familiar, and a particular inſtance of the ferocity of a ſhe-wolf I have given under the article dog.

There is nothing valuable in this animal but his ſkin, which makes a warm durable covering. His fleſh is ſo bad that it is abhorred by all animals, and no ſpecies will eat it, his own excepted. His breath exhales a moſt fetid odour. As to ſatisfy his voracious appetite he devours, without diſtinction, putrid fleſh, hair, bones, ſkin half tanned, or even any thing that comes in his way, he vomits frequently, and empties himſelf more often than he fills. In a word, he is every way offenſive; he has a ſavage aſpect, a frightful howl, an inſupportable ſtench, a perverſe diſpoſition, and fierce habit; he is hateful while living and uſeleſs when dead.

SUPPLEMENT.

WE have it from Pontoppidan, that wolves did not exiſt in Norway before the year 1718, and that in the laſt war between Sweden and Norway they followed the proviſions of the army.

The Viſcomte Querhoënt has informed me that there are two ſpecies of wolves at the Cape of Good Hope, the one black and the other grey with black ſpots; that they are bigger than thoſe of Europe, and have very large teeth, but their cowardice makes them little apprehended, though ſometimes, as well as the ounces, they will ſteal into the city in the night.

THE FOX.

THIS animal is famous for his craft, and he partly merits the reputation he has acquired. What the wolf *(fig. 62.)* executes by ſuperior ſtrength, the fox *(fig. 63.)* accompliſhes by cunning. Without attacking the ſhepherd, his dog, or even his flock, he finds a more certain way to ſubſiſt. Patient and prudent he waits the opportunity for depredation, varying his conduct according to circumſtances, always reſerving ſome arts for unforeſeen events. Self-preſervation is his grand object, and though as indefatigable, and more nimble

Engraved for Barr's Bailton.

FIG. 62.

Wolf.

FIG. 63.

Fox.

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nimble than the wolf, he never truſts entirely to the ſwiftneſs of his courſe, but contrives himſelf an aſylum, where he retires in caſes of neceſſity, and in which he dwells and brings up his young.

As among men, thoſe who lead a domeſtic life are more civilized than perpetual wanderers; ſo, among animals, the taking poſſeſſion of an home, ſuppoſes a ſuperior degree of inſtinct. The choice of ſituation, the art of rendering it a convenient habitation, and concealing the entrance to it, likewiſe indicate ſuperior ſkill and induſtry. Endowed with both theſe, the fox turns them to his advantage. He fixes his reſidence at the edge of a wood, yet not far from ſome cottage or hamlet; he liſtens to the crowing of a cock, and the cackling of other poultry; he ſcents them at a diſtance; he judiciouſly chooſes his time; creeps ſlily along; ſuddenly makes the attack, and rarely returns without his booty. If he can get into the hen-rooſt, he puts all to death, and retires with part of his prey, which he conceals at ſome diſtance; he then returns for more, which he takes away and hides in the ſame manner, though in a different place; and this practice he continues, 'till, warned by the approach of day, or the movements of the family, he retires to his

den. He makes uſe of ſimilar arts with the fowler; viſits the nets and ſpringes very early in the morning, expertly takes the birds out of the ſnare, carries them off ſucceſſively, and conceals them in different places; where he ſometimes leaves them for two or three days, but is never at a loſs to recover his hidden treaſure when he is in need. The young hare and rabbit he hunts down; the old ones he ſeizes in their ſeats, and never miſſes thoſe which are wounded, he diſcovers the neſts of partridges and quails, ſeizes the old ones while they are ſitting, and deſtroys a prodigious quantity of game; ſo that if he is leſs injurious than the wolf to the peaſant, he is more noxious to the gentleman. The chace of the fox requires leſs preparation, and is more amuſing than that of the wolf. Though all dogs have a great reluctance to the latter, they purſue the fox with pleaſure, and often in preference to the ſtag or hare. He is uſually hunted with hounds, aſſiſted by terriers. The inſtant he finds himſelf purſued he makes to his den, and takes refuge at the bottom, into which the terriers will follow and keep him at bay, while the hunters remove the earth from above. But as his kennel is often under rocks, or among the roots of trees, he cannot then be dug out, nor

nor is the terrier able to contend with him at the bottom of his hole. In this caſe he remains ſecure; but if he can be dug out, the uſual way is to carry him in a bag to ſome diſtance, and there ſet him looſe before the hounds. His ſhifts to eſcape, when all retreats to his kennel are cut off, are various and ſurpriſing. He will then proceed in a direct line before the hounds, but making to the moſt woody grounds, he takes to thoſe paths moſt entangled with thorns and briars, and ſeldom fails to extremely harraſs and fatigue the dogs.

The moſt effectual method of deſtroying foxes, is to lay traps for them, baited with fleſh, live pigeons, or fowls. I once ſuſpended on a tree, at the height of nine feet, ſome meat, bread, and bones, at which the foxes had been ſo eager in leaping, that in the morning around it was beaten as ſmooth as a barn floor. The fox is extremely voracious; for beſides fleſh, he eats with equal avidity, eggs, milk, cheeſe, fruit, and particularly grapes. When he cannot procure a ſufficiency of leverets and partridges, he falls upon rats, mice, ſerpents, toads, and lizards, which he deſtroys in great numbers, and thereby renders one ſervice to mankind. Inſects, ſhell-fiſh, and even the hedgehog, at times, become his prey. He attacks

bees

bees and waſps for the ſake of their honey; they at firſt ſeem to force him to retire, but this is only to roll upon the earth and cruſh thoſe which have ſtuck to his ſkin; he then returns to the charge, and by perſeverence, obliges them to abandon their combs, when he devours both wax and honey.

The fox greatly reſembles the dog in the internal parts. His head, however, is larger in proportion to his body, his ears are ſhorter, his tail more buſhy, and his eyes more oblique. He alſo differs from the dog by a ſtrong offenſive ſmell, which is peculiar to his ſpecies, and alſo in diſpoſition; for he is not eaſily tamed, can never be rendered truly domeſtic, pines and dies of chagrin when long denied his liberty. As we have already ſtated, he refuſes to copulate with the female dog. The foxes bring forth once a year, they generally have four or five, ſeldom ſix, and never leſs than three. When the female is pregnant, ſhe ſeldom goes out of her kennel, where ſhe prepares a bed for her young. She is in ſeaſon in winter, and there are young foxes in April. When ſhe finds her retreat is diſcovered, and that her cubs have been diſturbed, ſhe endeavours to find a place of greater ſecurity and carries them to it one after the other. They come blind into the world,

world, and like dogs alſo they grow from eighteen months to two years, and live to the age of thirteen or fourteen.

The ſenſes of the fox are as good as thoſe of the wolf; his ſmelling is more acute, and the organs of his voice are more ſupple and more perfect. The wolf only howls, while the fox yelps, barks, and has a mournful cry like that of the peacock. He varies his tones alſo according as he is affected. He has tones expreſſive of deſire, ſorrow and pain; the latter of which he never uſes but when ſhot or deprived of ſome member, for he complains of no other wound, and like the wolf, when attacked with cudgels only he never complains, but defends himſelf with bravery and courage, though in obſtinate ſilence until the laſt gaſp. He bites dangerouſly and with ſuch determined fury that it is difficult to make him quit his hold. His yelping is a kind of quick barking, which he generally terminates by raiſing his voice and reſembling the cry of a peacock. In winter, eſpecially during froſt he yelps continually, but in the ſummer he is almoſt entirely mute, and at this ſeaſon he ſheds his hair. The ſkin of young foxes, or thoſe taken in ſummer, are held in little eſteem. The fleſh of the fox is not ſo bad as that of the wolf; dogs, and even men,

men, eat it in autumn, eſpecially if he has been fattened with grapes; and in winter good furs are made of his ſkin. He ſleeps ſo ſound that he may be cloſely approached without being awakened; he ſleeps in a round poſition like a dog, but when he only means to reſt he ſtretches out his hind legs and lies flat on his belly. In this poſture he watches for birds as they perch on the hedges, who no ſooner perceive him, than they ſet up ſhrill cries to warn their neighbours againſt their mortal enemy: the jays and magpies in particular will follow him for ſome hundred paces, conſtantly repeating their cries as a warning. The fox has a very diſagreeable odour which makes it neceſſary to keep them in ſtables at a diſtance from the houſe, and this perhaps might be the reaſon why thoſe I reared were leſs tame than the wolf, with whom this precaution was unneceſſary. At the age of five or ſix months the foxes began to chace the ducks and fowls, upon which account I was obliged to chain them, and although I kept theſe very foxes for more than two years, they never attempted to touch a fowl while they were ſo confined; a live hen was frequently fixed near them for a whole night, and although they had previouſly been kept ſhort of food they never forget they were chained,

and

and the hen was invariably left by them undiſturbed.

The fox is ſo ſubject to the influence of climate, that the ſpecies are almoſt as numerous as of any domeſtic animal. The generality of French foxes are red, ſome few are grey, but all have the tip of their tail white; the latter are ſometimes called coal-foxes from having very black feet. In the northern countries there are foxes of all colours; black, blue, dark and light grey, white, white with reddiſh legs, white with black heads, white with the end of the tails black, red with the throat and belly white, and laſtly, with a ſtripe of black along the back and another croſſing it at the ſhoulders, of theſe the throats are alſo black and they are larger than the others. The common kind are the moſt generally diffuſed; they are not only in Europe, but throughout Aſia and in America; but in Africa and the countries near the equator they are very rare. Thoſe who ſtate having ſeen them at Calicut and other ſouthern provinces, muſt have taken the jackall for the fox. Ariſtotle falls into a ſimilar error when he ſays the foxes of Egypt were ſmaller than thoſe of Greece; thoſe little Egyptian foxes being only polecats whoſe ſtench is intolerable. They are evidently the natives of

cold climates, both from their not being affected by extreme cold and their living in the countries adjacent to both poles. The hair of the white fox is not much eſteemed becauſe the hairs fall eaſily off; the ſilver-grey is better and the blue and ſtriped are prized on account of their variety, but the black is the moſt valuable and yields to none but the ſable. There are foxes in Spitzbergen, Greenland, Lapland, and in Canada; in the latter place there are ſome of the ſtriped ſpecies, the common kind are not ſo red as thoſe in France, but their hair is longer and more plentiful.

SUPPLEMENT.

SOME travellers aſſert that the heads and feet of the Greenland foxes reſemble thoſe of dogs and that they bark like them; that they are of various colours ſuch as white, grey and blue, and that they live upon eggs, birds, flies, bees, and whatever they can procure from the holes of the rocks in the ſea. At Kamtſchatka there are ſome of a dark cheſnut, others red with black

black bellies, and others of a dark grey, all of which have thick coats of hair very gloſſy and beautiful.

In Norway there are white, red, and black foxes, and alſo ſome with black lines along the back. Pontoppidan, who delights in the marvellous, relates ſeveral wonderful tales of theſe animals, and adds that they frequently catch lobſters with their tails.

THE BADGER.

THE Badger is an indolent, diffident, ſolitary animal, who retires to the moſt ſecret places, and there digs for himſelf a ſubterraneous reſidence. He not only ſhuns ſociety but even the light, ſpending three-fourths of life in his obſcure retreat, and never venturing out but in ſearch of food. He burrows the ground with great facility, as his body is oblong, his legs ſhort, and the claws, thoſe eſpecially of his fore feet, are very long and compact; his habi-

tation is often at a conſiderable diſtance from the ſurface, and the paſſage to it always oblique and winding. The fox, who is leſs expert at digging, often benefits from the labours of the badger; unable to force him to quit his retreat he often drives him from it by ſtratagem. He ſtands ſentinel, and defiles it with his ordure, which proves an infallible expedient. The badger gone, he takes poſſeſſion, enlarges, and accomodates it for his own purpoſe. Though forced to remove, the badger leaves not the country, but digs himſelf a new habitation at a little diſtance, from which he never goes out but at night, even then not far, and returns upon the ſmalleſt appearance of danger. In this precaution alone conſiſts his ſafety, for his legs being very ſhort the dogs ſoon overtake him. Upon being attacked he throws himſelf backwards, and as his legs, claws, jaws, and teeth, are very ſtrong, he is enabled to fight with obſtinacy, and it is ſeldom that he dies unrevenged.

Formerly, when badgers were more common, terriers were trained up to hunt and take them in their burrows; but this was no eaſy taſk, as his mode of defence is to retire, and doing ſo to undermine great quantities of earth, either to ſtop up the paſſage or bury the dogs

dogs under it. The only certain way of taking him is to open the hole above, after the dogs have driven him to the extremity. He is generally taken hold of with pincers, and then muzzled to prevent his biting. I have had ſeveral brought me taken in this manner, ſome of which I kept a long time. The young ones are eaſily tamed; they will play with dogs, and follow the perſon from whom they receive their food; but the old ones always retain their ſavage diſpoſitions. They are neither miſchievous nor voracious, yet they are carnivorous; they prefer raw meat, but will eat fleſh, eggs, cheeſe, butter, bread, fiſh, fruit, nuts, grain, roots, &c. They ſleep the greateſt part of their time, yet they are not ſubject to a lethargic torpor during the winter, like the dormouſe, or mountain rat; this makes them very fat, although they eat moderately, and they can go ſeveral days without food.

They keep their holes extremely clean, nor ever defile them with their ordour. The male is ſeldom found with the female; when the latter is about to bring forth ſhe collects a quantity of herbage, which having bundled up ſhe trails along, between her feet, to the bottom of her hole, where ſhe converts it into a commodious bed for herſelf and young ones; ſhe brings

brings forth in the ſummer, and generally has three or four at a time; ſhe nouriſhes them at firſt with her milk, but very ſoon inures them to ſuch food as ſhe can provide. For them ſhe ſeizes young rabbits, field-mice, lizards, graſshoppers, takes birds eggs from their neſts, and uncovers bee-hives, where they are buried, and carries away their honey; all which ſhe carries to her brood, whom ſhe often brings to the mouth of the hole, in order to feed or ſuckle them. Theſe animals are naturally chilly; and thoſe reared in the houſe will ſcarcely ever quit the ſide of the fire, which they will approach ſo cloſe as frequently to burn themſelves. They are very ſubject to the mange, and will infect thoſe dogs which penetrate their burrows, unleſs they are carefully waſhed. The hare of the badger is always filthy; between the anus and tail there is an opening about an inch deep, whence an oily ill-ſcented liquid is conſtantly emitted, and which the animal is fond of ſucking. Its fleſh has not a very bad taſte; and of its ſkin are made coarſe furs, collars for dogs, trappings for horſes, &c.

In this ſpecies we know of no varieties; and our reſearches have been fruitleſs to diſcover ſuch as have been ſaid to exiſt; indeed ſome

ſome of the differences are ſtated to be ſo trivial that they cannot fairly be conſidered as diſtinct from the others; beſides thoſe ſpecies in which there are actual varieties are uſually very abundant, and generally diffuſed, whereas that of the badger is one of the leaſt numerous and moſt limited. We are not certain that they are to be found in America, unleſs we regard as a variety the animal ſent from New York, of which M. Briſſon has given a ſhort deſcription, under the name of the White Badger. They exiſt not in Africa, for the animal from the Cape of Good Hope, which Kolbe deſcribes under the name of the Stinking Badger, belongs to a different ſpecies; and we doubt whether the Foſſa of Madagaſcar, mentioned by Flacourt, is an actual badger although he ſays they reſemble thoſe in France. Other travellers take no notice of it, and Dr. Shaw even ſays it is unknown in Barbary. It ſeems, likewiſe, not to exiſt in Aſia; and that the badger was unknown in Greece is plain from Ariſtotle's not mentioning of it, and its having no name in the Grecian language. This animal, therefore, a native of the temperate climates of Europe, has never been diffuſed beyond Spain, France, Italy, Germany, England, Poland, and Sweden, and

even

even in thoſe countries it is not very common. There are not only no varieties but the badger *(fig. 64.)* does not approach any other ſpecies. Its characteriſtics are ſtriking and ſingular; to it excluſively belong the alternate ſtripes upon its head, and the kind of bag under its tail; his body is alſo nearly white above and black below, whereas in all other animals their bellies are always lighter than their backs.

THE OTTER.

THE Otter *(fig. 65.)* is a voracious animal, but more fond of fiſh than fleſh, and is ſeldom found but at the ſides of lakes and rivers. He ſwims with more facility than the beaver, who has membranes on his hind feet only, and whoſe toes on the fore feet are ſeparate, whereas the otter has membranes on all his feet; and he can ſcarcely walk faſter than he ſwims. He never ventures to the ſea like the beaver, but ſwims up and down the rivers to conſiderable diſtances. Although he can remain a long

FIG. 64

Badger

FIG. 65

Otter

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a long time under water he cannot be properly called an amphibious animal; that is one equally capable of living in air or in water; his conformation is not calculated for his living in the latter element, and he requires to breath as much as any terreſtrial animal. If they happen to be entangled in a net they drown, and this evidently for want of time to deſtroy a ſufficient quantity of the meſhes to effect their eſcape. His teeth are like thoſe of the martin, though larger and ſtronger in proportion to its ſize. For want of fiſh, frogs, water-rats, or other food, he will eat the young branches and bark of aquatic trees; and in the ſpring he will eat the young graſs. He is as little afraid of cold as moiſture. It couples in winter and brings forth in March, and commonly three or four at a time. The young ones are not near ſo handſome as the old. From the aukwardneſs of its motions, deformity of figure, and a kind of mechanical cry, which it repeats almoſt without intermiſſion, one ſhould ſuſpect it a ſtupid animal. He, however, becomes induſtrious with age, at leaſt ſufficiently ſo to wage a ſucceſsful war with the fiſhes, who, with reſpect to inſtinct and ſentiment, are greatly inferior to other animals; and yet I can ſcarcely believe he has,

not the talents but habitudes of the beaver, ſuch as always going up againſt the ſtream, in order to return more eaſily down the current when loaded with his prey; that of fitting up his houſe, and lining it with boards to exclude the water; that of laying in a quantity of fiſh againſt a future ſcarcity; and laſtly, that of his being rendered ſo tame and ſubſervient as to fiſh for his maſter, and even taking his booty into the very kitchen. All I know is, that the otter does not dig his own habitation, that he fixes his reſidence in the firſt hole he finds, under the roots of the poplar or willow, in the clefts of rocks, and even among piles of floating wood; and in thoſe they bring forth their young; where we alſo find heads and bones of fiſhes; that they frequently change their reſidence; that they drive away their young at the end of ſix weeks or two months; that thoſe I attempted to tame endeavoured to bite, though then feeding on milk, and unable to chew fiſh; that a few days after they became more mild, probably from having become ſick and weak; that ſo far from being eaſily habituated to a domeſtic life, all I endeavoured to rear died very young; that, in fine, the otter is of a ſavage and cruel diſpoſition; that when he gets into a fiſh-pond he does the ſame as a

polecat

polecat in a hen-houſe, that is kill more than he can eat, and then carry away one in his mouth.

Though the otter is not known to ſhed his hair, yet his winter coat is browner than in ſummer, ſells for more money, and makes a very good fur. Some people eat their fleſh, which has a diſagreeable fiſhy taſte; their retreats are always infected with the ſtench of fiſh, which they have ſuffered to rot around them. Dogs have no averſion to chace the otter, whom they eaſily overtake when at a diſtance from his hole or the water; when ſeized he defends himſelf obſtinately, bites cruelly, and ſometimes with ſuch force as to ſnap their leg bones, and he never quits his hold as long as he retains his breath. The beaver, however, though not remarkable for ſtrength, drives the otters away, and will not ſuffer them to dwell near his reſidence.

Though this ſpecies is not very numerous, they are to be met with in Europe from Sweden to Naples, and alſo in North America. They were well known to the Greeks, and are probably to be found in all temperate climates, eſpecially in thoſe places which abound with water; for he can inhabit neither burning ſands, nor dry deſarts; and he equally avoids rivers

which are ſparingly inhabited, or too much frequented. I do not believe that they exiſt in hot countries, for the jiya, which is found at Cayenne, and called the Braſilian otter, though approximate, is a different ſpecies. The North-American otter reſembles the European in every reſpect, except that his fur is more black and beautiful than thoſe found in Sweden or Muſcovy.

SUPPLEMENT.

IT is aſſerted by Pontoppidan, that the otters in Norway frequent the ſalt, as well as the freſh waters; that they live in the holes of rocks, and that they are drawn out by imitating their voices, which is a ſort of whiſtle; and he further ſays, that one that was tamed and fed on milk conſtantly, went into the water, and brought fiſh home with him to the houſe

M. de la Borde has informed me there are three ſpecies of otters in Cayenne, being of different ſizes, the largeſt weighing at leaſt 50 pounds, and the ſmalleſt not above three or four. He ſays they are ſo numerous in Guinea as to be

ſeen

ſeen in troops, and ſo fierce that they will encounter the dogs; but that they are eaſily tamed and become very familiar. M. Aublit, and M. Oliver, both confirm this account of M. de la Borde, adding they have ſeen them conſiderably larger than he has mentioned; and I have received one from Guinea, which appears to be the ſmall one he alludes to; it is no more than ſeven inches long, meaſuring from the tip of the noſe to the tail, the latter of which is ſix inches long, its head and body is marked with regular dark ſpots mingled with a light yellow, its belly white, its tail brown, excepting juſt at the extremity, which is white alſo; its ears appear to be proportionally larger than the common otter, and its legs ſhorter.

THE MARTIN.

THE generality of naturaliſts have conſidered the Martin and Pine-weazle, as animals of the ſame ſpecies. That they copulate together is a circumſtance which, unſupported by any other teſtimony than Geſner and Ray, who only

only aſſert it on the authority of Albertus, appears to me ſo doubtful, that I am inclined to think that they have no intercourſe, but form two diſtinct and ſeparate ſpecies; for if the pine-weaſel was only a wild martin, or the martin only a tame pine-weaſel, the former would uniformly preſerve the ſame characteriſtics, and the latter would vary; as in the wild cat, which always remains the ſame, and the domeſtic one aſſumes all ſorts of colours. The martin, on the contrary, never varies; its characteriſtics are as peculiar and permanent as thoſe of the pine-weaſel; this alone is ſufficient to prove they are not ſimple varieties, but different ſpecies. Indeed there is not the ſmalleſt reaſon for terming the martin a domeſtic animal, ſince he is in no degree more tame than the fox, who, like him approaches the habitations of men in ſearch of prey, nor has he any more communication with man than any other animal whom we call wild and ſavage. Equally in diſpoſition and temperament does the martin differ from the pine-weaſel; the latter ſhuns open countries, confines itſelf to the boſom of the foreſt, and is never in great numbers but in cold climates, while the former approaches our habitations, even takes up his reſidence in old buildings, hay-lofts, and in holes in the wall.

Beſides,

Beſides, this ſpecies is diffuſed in great numbers over all the temperate countries, and are even found in hot ones, as Madagaſcar, and the Maldivia Iſlands, and is never met with in the northern regions.

The martin has a ſharp countenance, a lively eye, ſupple limbs, flexible body, all its movements are quick, and he rather leaps and bounds than walks; with great facility he climbs walls, enters pigeon-houſes, and devours eggs, pigeons, fowls, mice, rats, moles, and birds in their neſts. I reared and kept one of them a conſiderable time. He was eaſily tamed to a higher pitch, but appeared incapable of attachment, and retained ſo much of his wild diſpoſition, that I could not ſuffer him to go at large. He made war upon the rats, and harraſſed the poultry whenever they came within his reach. Though faſtened by the middle of the body, he often got loſe; at firſt he went to no great diſtance, would return in a few hours, but without teſtifying the ſmalleſt joy or affection to any one perſon, and being hungry he would call for food like a cat or dog; his excurſions became afterwards more and more long, and at length he finally diſappeared. He was then about a year and a half old; ſeemingly at the age when Nature had aſſumed her full aſcendancy.

aſcendancy. Salad and herbs excepted, nothing eatable came amiſs to him; he was very fond of honey, and preferred hemp-ſeed to every other grain. We remarked that he drank frequently, that he ſometimes ſlept two days without intermiſſion, and at others he would keep awake for two or three days together; that before going to ſleep he would fold himſelf up in a round poſture, and cover his head with his tail; that while awake he was in a perpetual motion, ſo violent and troubleſome, that even had he not worried the fowls, there would have been a neceſſity for chaining him to prevent his breaking every thing to pieces. I had ſeveral other martins of a more advanced age, which had been taken in traps, but they remained totally wild, bit every perſon who attempted to touch them, and would eat nothing but raw fleſh.

This animal, it is ſaid, brings forth as often as cats; and as we find young ones from ſpring to autumn, we may, indeed, preſume that ſhe breeds more than once a year; and though the younger females do not produce more than three or four, thoſe more advanced in age have ſix or ſeven at a time. When about to be delivered they take up their reſidence in ſome hay-loft, in the holes in a wall, which they

ſtuff

ſtuff with ſtraw or graſs, in clefts of rocks, or in the hollow trunk of an old tree. When diſturbed in their habitations they remove their young, of which the growth is very quick, for the one I reared had nearly attained his full growth at the expiration of the firſt year, from hence it may be inferred their lives do not exceed eight or ten. Its ſmell is not very diſagreeable, but like that of counterfeit muſk. Both the pine-weaſel and martin, like ſeveral other animals, have interior veſicles which contain a ſtrong-ſcented ſubſtance like that which the civet furniſhes. The fleſh in ſome degree partakes of this odour, yet that of the pine-weaſel is not altogether unpalatable: the fleſh of the martin is more diſagreeable, and its ſkin is of far leſs eſtimation.

SUPPLEMENT.

THERE is an animal in Guiana very ſimilar to the common martin, its principal difference conſiſts in its being ſome trifle larger, and in having its hair ſprinkled with

black and white, a ſhorter tail and ſpotted on the head; there is alſo a material difference in the toes, thoſe of the latter animal bearing a much greater reſemblance to thoſe of a rat or ſquirrel than to the toes of a martin.

THE PINE-WEASEL.

THE Pine-weaſel, or as it is alſo called, the yellow breaſted Martin, is a native of the northern countries, where the quantity of furs produced by this ſpecies alone is really aſtoniſhing. In temperate climates they are ſeldom met with, and in warm ones never. There are ſome few in Burgundy, and alſo in the foreſts of Fontainbleau, but in general they are as rare in France as the other martin is common. There are none of them in England, becauſe in that country they have no extenſive woods. They are alike averſe to open and inhabited countries; they remain in the receſſes of the foreſts, and conceal not themſelves among rocks, but range through the thicket or climb the

the trees. They live by the chace, and deſtroy a prodigious quantity of birds, whoſe neſts they ſeek to devour the eggs; the ſquirrel and dormouſe likewiſe becomes their prey, and they are alſo very fond of honey. They not only differ from the martin by avoiding the habitations of men, but alſo in their manner of endeavouring to eſcape in the chace. When the former finds himſelf purſued, he makes to his favourite hay-loft, or hole; but the latter humours the chace for ſome time, and then will climb up the trunk of ſome tree, and from thence take a view of his purſuers as they paſs along. The track which he leaves in the ſnow has the appearance of being made by ſome large animal, becauſe he always leaps and his two feet ſtrike the ground at the ſame time. Though rather larger than the martin his head is ſhorter, but his legs are longer, and conſequently he runs with more eaſe. His neck is yellow, whereas that of the martin is white; his hair is alſo finer, more thick, and leſs ſubject to ſhed. The female does not prepare a bed for her young, and yet ſhe lodges them very commodiouſly. Squirrels form neſts on the tops of trees with as much ſkill as birds; when the pine-weaſel is near her time ſhe climbs to

ſome ſquirrel's neſt, drives away the owner, enlarges it, and there depoſits her young; ſhe ſometimes takes the neſts of owls or buzzards, or holes in old trees, from which ſhe ſoon diſlodges the woodpeckers, and other birds. She brings forth in ſpring, and never more than two or three; the young ones come into the world with their eyes cloſed, but they nevertheleſs ſoon acquire their full growth. The mother brings them eggs and birds until they are able to go out, and then ſhe takes them abroad to hunt with her. Birds are ſo well acquainted with their enemies that they ſend forth the ſame notice of danger upon ſeeing this animal as when they perceive a fox; and a proof that it proceeds more from hatred than fear, is there not only giving this alarm, but alſo following theſe and all other carnivorous animals, and never doing ſo at the approach of the ſtag, roe-buck, hare, &c.

Pine-weaſels are as common in the northern parts of America as they are in Europe and Aſia. They are found in Canada, at Hudſon's Bay, and as far north in Aſia as the kingdom of Tonquin and the empire of China. They muſt not, however, be confounded with the ſable, an animal whoſe fur is much more precious. The ſable is black, but the pine-

weaſel

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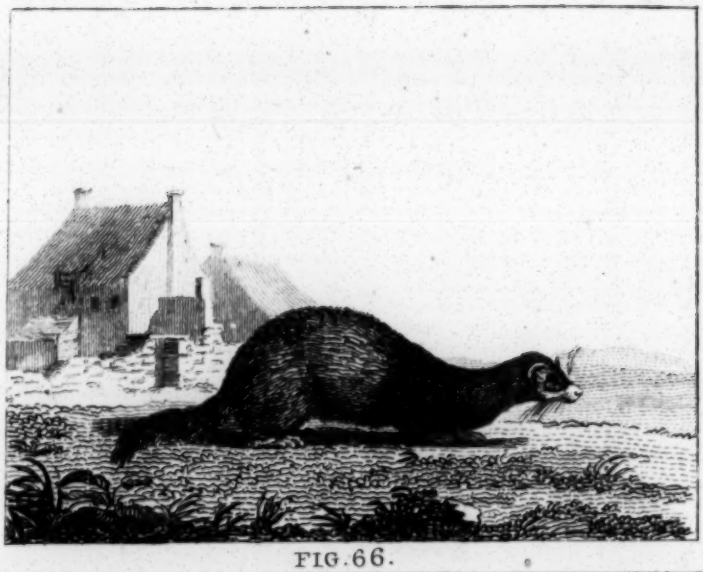

FIG. 66.

Pole Cat.

FIG. 67.

Ferret.

weaſel is brown and yellow; the brown part of the ſkin is the moſt in eſtimation, and that extends along the back to the very extremity of the tail.

THE POLECAT.

THIS animal, *(fig. 66.)* greatly reſembles the martin in temperament, diſpoſition, habits, and form of its body. Like him he approaches our dwellings, mounts to their roofs, and ſettles himſelf in hay-lofts, barns, and unfrequented places; from whence he ſteals by night into farm-yards, aviaries, and pigeon-houſes, where, without making ſo much noiſe as the martin, he does more miſchief; he wrenches off all their heads, and then carries them away, one by one, to his hole or dwelling. If, as it often happens, he cannot convey them away entire, from the ſmallneſs of the entrance, he eats the brains on the ſpot, and then retires with their heads. He is particularly fond of honey, will attack the hives in winter, and force the bees to abandon them. They are ſcarcely ever found

found at any great diſtance from inhabited places. They copulate in ſpring, when the males will fiercely contend on the roofs and ſheds for the female. They then leave her, and go into the fields or woods for the ſummer, but ſhe remains in her dwelling, and does not take her young ones out till towards the end of the ſummer; ſhe produces from three to five, does not ſuckle them long, but ſoon accuſtoms them to ſuck blood, and the eggs of birds.

In villages they chiefly ſubſiſt on poultry, and in the fields or woods on what the chace affords them; when in the latter they fix their reſidence in the burrows of rabits, clefts of rocks, or trunks of hollow trees, from whence they iſſue at night in queſt of the neſts of partridges, larks, and quails; they climb trees to get at thoſe of other birds; are conſtantly on the watch for rats, field-mice, and moles, and are at continual war with the rabbit, who cannot eſcape, as they enter their burrows with eaſe. A ſingle family of polecats is ſufficient to deſtroy a whole warren; and indeed this would be a ſimple method of diminiſhing their number where they are found too numerous.

The polecat is rather leſs than the martin; it has a ſhorter tail, a ſharper ſnout, and its hair

hair is more black and buſhy. It has ſome white hair on its forehead, and about the noſe and mouth. They differ very much in voice, that of the martin being ſharp and loud, and that of the polecat deep and hollow, but both of them, as well as the ſquirrel, have an harſh, angry growl, which they often repeat when irritated; the odour they ſend forth is alſo very different, that of the former being rather agreeable, but the latter to the laſt degree fetid. When heated or enraged it ſends forth an intolerable ſtench to a conſiderable diſtance. The dogs will not eat its fleſh, and its ſkin, though good in itſelf, is of little value, becauſe it can never be entirely diveſted of its natural odour; which odour proceeds from two little veſicles, ſituated near the anus, which contain and exude an unctuous matter highly diſagreeable, not only in the polecat but in the ferret, weaſel, badger, &c. but which conſtitutes a perfume in the civet-cat, pine-weaſel, and ſeveral other animals.

The polecat ſeems to belong to the temperate climates. Few of them are found in the northern regions, and they are ſtill more ſcarce in the ſouthern. The Stinkard of America is a different animal; nor does the ſpecies of polecat appear to extend farther than from the confines

confines of Italy to Poland; it is certain they avoid the cold, and they reſort to houſes in the winter, and their footſteeps are never ſeen in the ſnow either in the woods or fields diſtant from human dwellings, and we may fairly conclude they are averſe to heat, from never being found in the ſouthern regions.

THE FERRET.

SOME authors have doubted whether the Ferret *(fig. 67.)* and polecat did not belong to the ſame ſpecies. Perhaps the reſemblance there ſometimes is in their colour firſt gave riſe to this doubt. The polecat, however, is a wild animal, and a native of temperate climates, whereas the ferret is a native of warm countries, and cannot exiſt even in France, but in a domeſtic ſtate. The ferret is preferred to the polecat for driving rabbits from their burrows, becauſe he is more eaſily tamed. They both have a ſtrong and diſagreeable ſmell, yet as they never intermix, and differ in a number of eſſential

eſſential characters, they may with ſafety be pronounced two diſtinct ſpecies. The ferret has a longer and thinner body, a narrower head, and a ſharper ſnout, than the polecat. It has not the ſame ſagacity in providing ſubſiſtence, and unleſs taken care of, and nouriſhed in the houſe, it cannot even exiſt, at leaſt in our climates, for thoſe which have been loſt in the burrows of rabbits have never multiplied, but moſt probably periſhed by the ſeverity of the winter. The ferret alſo, like other domeſtic animals, varies in colour, and is as common in hot countries as the polecat is ſcarce. The female is ſmaller than the male; and when in ſeaſon, Geſner ſays, ſhe has even been known to die if her deſires were not gratified. They are reared in caſks or cheſts, where it is uſual to furniſh them with beds of flax. They ſleep almoſt perpetually, but no ſooner are they awake than they eagerly ſeek for food, which conſiſts of bran, bread, milk, &c. The females bring forth twice a year, and go ſix weeks with their young, Some of them eat their young almoſt as ſoon as they are brought forth, are immediately in ſeaſon again, and then have three litters in the year, each of which conſiſts of from five to nine.

This animal is by nature a mortal enemy to the rabbit. If even a dead one is preſented to a young ferret, although he had never ſeen a rabbit before, he flies at and tears it with fury; but if it be alive, he ſeizes it by the noſe or throat, and ſucks its blood. When let into the burrows of rabbits, it is neceſſary to muzzle him, that he may not kill them in their holes, but only oblige them to run out that they may be entrapped in the nets; beſides, if he is ſuffered to go in unmuzzled, there is great danger of his being loſt; for having ſucked the blood of the rabbit, he will fall aſleep; and ſmoking the hole is not always a ſucceſsful expedient to bring him back, becauſe as the burrows frequently communicate with each other, he is apt to be the more bewildered the more he is ſurrounded with ſmoke. The ferret is alſo made uſe of by boys in ſearching for birds neſts in the holes of walls or trees.

Strabo ſays the ferret was brought from Africa into Spain; which does not appear void of foundation, as Spain is the native climate of rabbits, and the country where formerly theſe animals moſt abounded. It is probable, therefore, that the rabbits having increaſed ſo much as to become incommodious, the ferret was introduced to diminiſh them, inſtead of encouraging

raging the race of polecats, from which no advantage could have accrued but the death of the rabbit, whereas by the ferret ſome benefit is alſo obtained by the hunter. The ferret, though eaſily tamed and rendered docile, is exceedingly iraſcible; he has always an ill ſmell, but more ſo when heated or irritated. He has lively but inflamed eyes; all his movements are quick, and is beſides ſo ſtrong that he will eaſily maſter a rabbit three or four times as big as himſelf.

Notwithſtanding the authority of interpreters and commentators, there are ſtill doubts whether the ferret be the ictis of the Greeks. "The ictis (ſays Ariſtotle) is a kind of wild weaſel, ſmaller than the little Malteſe dog, but reſembling the weaſel in its hair, form, whiteneſs in the under parts of its body, and alſo in its cunning. Though eaſily tamed, it does miſchief among the bee hives, being extremely fond of honey. It will alſo attack birds, and like the cat, its genital member is bony." It appears firſt a contradiction, in ſaying the ictis is a ſpecies of wild weaſel, which is eaſily tamed, for with us the common weaſel is not to be tamed at all; ſecondly, the ferret, though larger than the weaſel, cannot be compared with the lap-dog in point of ſize; thirdly, it is evident that the ferret does not poſſeſs the cunning

of the weaſel, nor is it even capable of artifice; and laſtly, it does no miſchief to beehives, nor is it fond of honey. I enquired of M. de la Roy, intendant of the royal foreſts as to this laſt fact, and this was his anſwer: "M. de Buffon may be aſſured that the ferret has no abſolute inclination for honey; but if kept on ſlender diet, may be forced to eat it. For four days I fed ſome with bread ſoaked in water mixed with honey; but though they ate pretty large quantities of it the laſt two days, the weakeſt of them was become ſenſibly more thin." This is not the firſt time M. de la Roy has furniſhed me with facts for the advantage of this work. Having no ferret in my poſſeſſion, I made the like experiment on the ermine, by giving him nothing but honey to eat, and milk to drink; but he died in a few days. It appears, then, that neither the ferret nor ermine are fond of honey, like the ictis of the ancients, which leads me to think that the word ictis is nothing more than a generic name; or if it denotes any particular ſpecies, it is rather that of the martin or polecat; both of which poſſeſs the cunning of the weaſel, attack beehives and are particularly fond of honey.

68. FIG. 69.

Pine Weasel. *Weasel.*

71. FIG. 70.

Rosdet. *Ermine.*

THE WEASEL.

THE Weaſel *(fig. 69.)* is as frequent in warm and temperate climates, as it is ſcarce in cold ones; the ermine *(fig. 70.)* on the contrary, is numerous in the northern, is ſcarcely to be met with in the temperate, and never in the warm climates. Theſe animals, therefore, form two diſtinct ſpecies. The circumſtance which may have given riſe to their being confounded, was poſſibly our common weaſel being ſometimes white during winter: in this characteriſtic they are alike; but there are others in which they widely differ. The ermine, red in the ſummer, and white in winter, has, at all times, the end of the tail black; whereas the end of the weaſel's tail is yellow, even of that which turns white in the winter; it is beſides much ſmaller, and its tail is ſhorter; nor ſhunning the habitations of man does the weaſel, like the ermine, reſide in woods and deſerts. I have kept both ſpecies together, but found no reaſon to ſuppoſe that animals which differ in climate,

climate, temperament, and diſpoſition, would intermix. Among the weaſels, it is true, there are ſome larger than others; but this difference never exceeds an inch in the whole length of the body; but the ermine is full two inches longer than the largeſt weaſel. Neither of them are to be tamed, but muſt always be kept in an iron cage. Neither of them will eat honey, nor ranſack the bee-hives, like the martin and polecat: and therefore, the ermine is not the wild weaſel, the ictis of Ariſtotle, which he ſays is eaſily tamed, and very fond of honey. So far are the weaſel and ermine from being eaſily tamed, that they will not even eat if taken notice of, but are in continual agitations, endeavouring to conceal themſelves; and in order to preſerve them it is neceſſary they ſhould be ſupplied with a parcel of wool or flax, in which they may hide themſelves, and which they make a receptacle for whatever is given them, and ſeldom ever eat but in the night; and rather than eat freſh meat they keep it for two or three days that it may corrupt. They ſleep three parts of the day, and even when at liberty they ſet apart the night for the ſearch of their prey. When a weaſel enters a hen-rooſt he never meddles with the cocks or old hens, but ſingles out the pullets and young chicks,

chicks, which he kills by a ſingle bite on the head, and then carries away the whole one after another; he alſo deſtroys the eggs, and ſucks them with incredible avidity. In winter they generally reſide in ganaries, or hay-lofts, where the females often continue in the ſpring, and bring forth their young among the hay and ſtraw; and during this period ſhe makes war with the rats and mice with more ſucceſs than the cats, ſince ſhe follows them into their holes, and ſo renders it impoſſible for them to eſcape; ſhe alſo attacks and deſtroys the pigeons in their houſes, and ſparrows, and other birds, in their neſts. In ſummer they remove to ſome diſtance from the houſes, always chooſing low grounds, about mills and ſtreams, hiding themſelves among the buſhes, to catch the birds; they not unoften take up their abodes in old willows, where the females ſometimes bring forth their young, for which ſhe prepares a bed of graſs, ſtraw, and leaves; ſhe litters in the ſpring, and it generally conſiſts of from three to five. They are brought forth with their eyes cloſed, but they very ſoon acquire growth and ſtrength ſufficient to follow the mother to the chace. They attack adders, water-rats, moles, field mice, &c. and traverſing the meadows devour quails and their eggs. They have

have not a regular walk, but bound forward by unequal and precipitate leaps; when inclined to mount a tree they make a ſpring, by which they are elevated ſeveral feet at once; and thus they alſo act when they attempt to ſeize a bird.

Theſe animals have alſo a very ſtrong and diſagreeable ſmell, which is much worſe in ſummer than winter, and when purſued or irritated they infect the air to a great diſtance. They always move with all poſſible ſilence, and never exert their voices but when they are hurt, of which the ſound is rough, and very expreſſive of anger. As their own odour is very bad they ſeem to feel no inconvenience from any foreign ſtench. A peaſant in my neighbourhood took three new-littered weaſels out of the carcaſs of a wolf, which had been ſuſpended by its hind legs from a branch of a tree; and though the wolf was almoſt rotten the female weaſel had brought graſs and leaves, and made a bed for her young in the thorax of this putrid carcaſs.

SUPPLEMENT.

THE Comteſſe Noyan declares in a letter ſhe favoured me with that I have done great injuſtice to the character of the weaſel, in ſaying that it is not to be tamed, ſince ſhe had reared one who would lick her hand when ſhe gave it food, and was equally fond and familiar as a dog or ſquirrel. And M. G. de Mornas aſſures me that he trained one that would follow him about; and he ſays that they are to be tamed by frequent ſtroking them on their backs, and beating them when they offer to bite.

THE ERMINE.

THE weaſel with a black tail is called the Ermine or Roſelet *(fig. 71.)* the ermine when it is white, and the roſelet when it is red or yellowiſh. Though not ſo numerous as the

common weaſel, yet many of them are found in ancient foreſts, and ſometimes during winter in the neighbourhood of woods. They are eaſy to be diſtinguiſhed at all times, as the end of their tails are always black, and the extremities of their ears and feet are white.

We have little to add, with reſpect to this animal, to thoſe obſervations we made in treating of the weaſel. I kept one for more than a twelvemonth, which to the laſt remained wild, and alſo retained its noiſome odour. It is a pretty little animal, and but for the laſt circumſtance, an agreeable one; it has lively eyes, a pleaſing countenance, and ſo rapid in its motions that it is impoſſible for the eye to follow them. It was always fed with eggs and fleſh, but the latter he would not eat until it became putrid. It diſliked honey, and having kept it three days without any other food, it died after eating a very little. The ſkin of this animal is very valuable; it is far more beautiful than that of the white rabbit; but it very ſoon changes ſomewhat yellow; though indeed the ermines of theſe climates have always a yellow ſhade.

Ermines abound in the north, particularly in Norway, Ruſſia, and Lapland; where, as every where elſe, they are red in ſummer, and white in winter. They feed upon a ſpecies of rats

and

and other ſmall animals, very numerous in Norway and Lapland, and of which we ſhall hereafter treat. They are ſcarce in temperate, and never found in warm climates. The animal of the Cape, which Kolbe calls by that name, and whoſe fleſh he ſays is wholeſome and well-taſted, is not an ermine, but a different ſpecies. The weaſels of Cayenne, mentioned by M. Barrere, and the grey ermines of Tartary and the North of China, mentioned by ſome travellers, are alſo animals different from our weaſels and ermines.

SUPPLEMENT.

IT is remarked by Pontoppidan that, in Norway, the ermines live among the fragments of rocks; that he catches mice, is very fond of eggs, and that when the weather is calm, he will ſwim acroſs the ſea to the neighbouring iſlands, for the ſake of ſea fowls which are there in great numbers. He ſays it is aſſerted that when the female brings forth upon an iſland, ſhe will bring her young to the conti-

nent upon a piece of wood, directing it with her ſnout; that this animal, though very ſmall, will kill bears and rein-deer, which it does by ſurpriſing them when aſleep and faſtening to their ears, where he holds ſo faſt that they cannot diſengage him; he alſo ſprings upon the backs of eagles and heath-cocks, and will ſuffer them to take him up in the air, from whence by ſucking their blood he ſoon forces them to deſcend.

THE GRISON.

THIS animal is added by our author in his Supplement, it having been introduced in a Dutch Edition of his work, where he ſays, it it thus mentioned by M. Allamand. "This little animal, ſaid he, was ſent to me from Surinam, and was named in the catalogue grey-weaſel, from which I derived Griſon. *(fig. 72.)* The upper part of its body is brown, but the hair having white points, it has the appearance of being a browniſh grey; the throat and neck is a bright grey; its noſe, and

Engraved for Barr's Buffon

FIG. 72
Grison

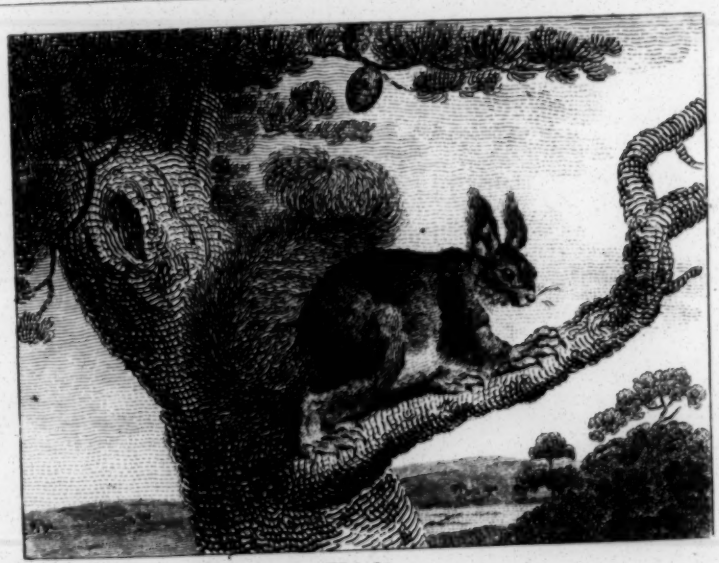

FIG. 73
Squirrel

BRITISH
ZOOLOGY
MUSEUM

and the lower part of its body and legs are black, which forms a ſingular contraſt with its head and neck; it is about ſeven inches long, its head is large in proportion to its body; its ears are nearly a half circle, its eyes are large, it has ſtrong teeth, five toes upon each foot, yellow claws, and a long tail which ends with a point. It more nearly reſembles the weaſel than any other animal, but yet it certainly belongs to ſome other ſpecies. I cannot find it mentioned by any traveller, and many perſons who had reſided at Surinam to whom I ſhewed it, declared it to be a ſtranger to them; from which it is evident, it muſt be a ſcarce animal, even in its own country, and lives in unfrequented places; of courſe I have not been enabled to obtain any farther particulars of it."

THE SQUIRREL.

THE Squirrel *(fig. 73.)* is a pretty little animal, is only half wild, and from its gentleneſs, docility, and even innocence of manners, is

is almoſt entitled to an exemption from this claſs. He is neither carnivorous nor injurious, though he ſometimes ſeizes on birds; his common food conſiſts of fruit, almonds, nuts, beech maſt, and acorns; he is handſome, lively, alert, and induſtrious; his eyes are full of fire, he has a good countenance, nervous body, and ſupple limbs; the beauty of his form is heightened by a ſpreading tail, reſembling a plume of feathers, which he raiſes above his head, and forms a kind of ſhade againſt the ſun. The under part of his body is furniſhed with an apparatus to the full as remarkable, and which indicate ſtrong generative faculties. The ſquirrel may be ſaid to be leſs a quadruped than any other four-footed animal. He generally holds himſelf almoſt upright, uſing his fore feet like hands in conveying food to his mouth. Inſtead of hiding under the earth he is continually in the air, approaching the birds by his lightneſs and activity; like them he dwells upon the tops of trees, traverſes the foreſts, by leaping from branch to branch, builds himſelf a neſt, picks up grains and ſeed, drinks the dew, and deſcends not to the earth but when the trees are violently agitated. He is never found in fields nor open countries; he approaches not the habitations of men, remains

mains not among buſhes and underwood, but reſides among the lofty trees of the foreſt. Still more does he avoid the water than the earth; and it is even aſſerted, that when he wants to croſs a river, or ſtream, he uſes the bark of a tree as a boat, and makes his tail ſupply the place of rudder and ſails. He ſleeps not, like the dormouſe, during winter, but is always awake and lively, inſomuch, that if only the trunk of the tree is touched, on which he may be repoſing, he inſtantly flies to another, or conceals himſelf under a branch. He collects a quantity of nuts during the ſummer, which he depoſits in the hollow part of ſome old tree, and has recourſe to them in the winter; which even then he will endeavour to obtain by ſcratching off the ſnow as he paſſes along. His voice is more ſhrill and loud than that of the martin; he has beſides a lowd growl of diſcontent, which he makes when irritated. As his motions are too quick to walk he generally leaps, or bounds forward; and ſuch is the ſharpneſs of his claws, and agility of body, that he inſtantaneouſly climbs a beech tree let the bark be ever ſo ſmooth.

During the fine nights in ſummer the ſquirrels may be heard crying as they chace each other among the trees. Seemingly averſe

to

to the heat of the ſun they remain all day in their holes, or neſts, from which they come at night to feed, copulate, exerciſe and divert themſelves. Their neſts are clean, warm, impenetrable to rain, and generally formed where the large branches fork off into ſmall ones. They begin its formation by carrying ſmall twigs, which they interweave with moſs; this they repeatedly preſs and ſtamp upon to give it capacity and ſolidity to hold themſelves and their young; they only leave one opening, which is near the top, and that ſo ſmall as to be hardly ſufficient for them to go in and out; over the opening is a kind of roof, in a conic form, which ſhelters the whole, and occaſions the rain to run off on each ſide. The females uſually produce three or four at a litter; they come in ſeaſon in the ſpring, and bring forth about the end of May, or beginning of June. They change their hair at the cloſe of winter, and the new hair is more red than that which they throw off; they comb and dreſs it with their fore feet and teeth, are very cleanly, have no ill ſmell, and their fleſh is tolerably good to eat. The hair of their tail is uſed to make bruſhes for painters, but their ſkin is of no value to the furrier.

Several

Several ſpecies approach that of the ſquirrel, though there are few varieties in the ſpecies itſelf. Some few are of an aſh-colour, but the moſt of them are inclined to red. The *petits-gris* are a different ſpecies, and remain always grey. And, without mentioning the flying ſquirrels, the white ſquirrel of Cambaye, which is very ſmall, that of Madagaſcar, called *tſitſihi*, which is grey, and, as Flacourt ſays, is neither handſome nor eaſily tamed, the white ſquirrel of Siam, the grey ſpotted ſquirrel of Bengal, the ſtreaked ſquirrel of Canada, the black ſquirrel, the large grey ſquirrel of Virginia, the white ſtriped ſquirrel of New Spain, the white Siberian ſquirrel, the variegated ſquirrel, or *mus ponticus*, the little American ſquirrel, thoſe of Braſil and Barbary, the palmiſt &c. which form ſo many ſeparate and diſtinct ſpecies from thoſe which we have been treating of, we ſhall find them all nearly the ſame.

SUPPLEMENT.

The Squirrel is ſo very numerous in Siberia, that we may rather ſuppoſe it to be a native of the northern than temperate regions.

to the heat of the ſun they remain all day in their holes, or neſts, from which they come at night to feed, copulate, exerciſe and divert themſelves. Their neſts are clean, warm, impenetrable to rain, and generally formed where the large branches fork off into ſmall ones. They begin its formation by carrying ſmall twigs, which they interweave with moſs; this they repeatedly preſs and ſtamp upon to give it capacity and ſolidity to hold themſelves and their young; they only leave one opening, which is near the top, and that ſo ſmall as to be hardly ſufficient for them to go in and out; over the opening is a kind of roof, in a conic form, which ſhelters the whole, and occaſions the rain to run off on each ſide. The females uſually produce three or four at a litter; they come in ſeaſon in the ſpring, and bring forth about the end of May, or beginning of June. They change their hair at the cloſe of winter, and the new hair is more red than that which they throw off; they comb and dreſs it with their fore feet and teeth, are very cleanly, have no ill ſmell, and their fleſh is tolerably good to eat. The hair of their tail is uſed to make bruſhes for painters, but their ſkin is of no value to the furrier.

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M. Gmelin ſays, they take them there in traps baited with dry fiſh. M. Aubry, curate of St. Louis, has an entire black ſquirrel ſent him from Martinico, and which had alſo little or no hair on its ears.

M. de la Borde mentions a ſpecies of ſquirrel at Guinea, which he ſays is of a red colour, lives in the woods, feeds on grain, and is about the ſize of a rat; is always ſeen alone, and is eaſily tamed. But I very much doubt whether this is a real ſquirrel, from its being found in ſo warm a climate. M. Kalm ſays there are ſeveral ſpecies in Pennſylvania, that the ſmalleſt ſort are the moſt handſome, and that the larger kind are very deſtructive to the plantations of maize, and that they will come in large bodies and deſtroy a whole field in a ſingle night, nay, that they are ſo miſchievous, that a price is ſet upon their heads. Their fleſh is eſteemed by the inhabitants, but no value is put upon their ſkins. Their figures, modes, and manners, he deſcribes to be ſimilar to thoſe of Sweden, and ſtates them to be more numerous in Pennſylvania than formerly.

BRITISH
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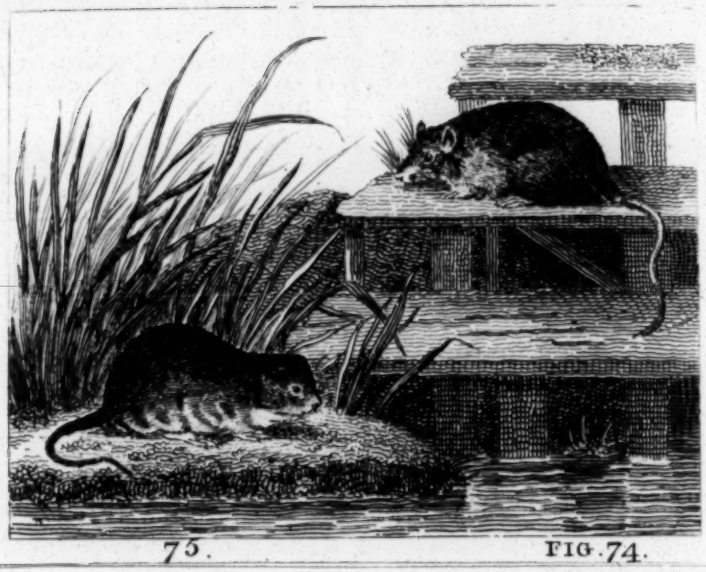

75. FIG. 74.

Water Rat. *Rat.*

77. 78. FIG. 76.

Mouse.

Long tailed Field Mouse. *Short tailed Dº Dº*

THE RAT.

IF we deſcend by degrees from great to ſmall, from ſtrong to weak, we find that Nature has uniformly maintained a balance throughout her works; attentive only to the preſervation of each ſpecies, ſhe creates a profuſion of individuals, and ſupports by numbers thoſe ſhe has formed of a diminutive ſize, and left unprovided with arms or courage; ſhe has not only enabled theſe inferior ſpecies to reſiſt and maintain their ground by their own numbers, but has added a kind of ſupplement to each, by multiplying the neighbouring ſpecies. The rat *(fig. 74.)*, the mouſe *(fig. 76.)*, the field mouſe *(fig. 77.)*, the water-rat *(fig. 75.)*, the ſhort-tailed field mouſe *(fig. 78.)*, the dormouſe, the ſhrew mouſe, with ſeveral others which I ſhall not mention here, becauſe they do not belong to our climates, form ſo many diſtinct and ſeparate ſpecies, but yet ſo little varied, that ſhould any one chance to fail, its

abſence would be hardly perceptible. It is this great number of approximate ſpecies that firſt gave naturaliſts the idea of genera, an idea which can only be employed when we view objects in the groſs, but which vaniſhes when we conſider Nature minutely.

Men began by appropriating different names to objects which appeared to be diſtinct; and, at the ſame time, they gave general denominations to ſuch as ſeemed to reſemble each other. Among unenlightened nations, and in the infancy of languages, there are hardly any but general names, or vague or ill-formed expreſſions for objects of the ſame order, though in themſelves highly different. Thus the oak, beech, linden, fir, yew, pine, had at firſt no name but that of tree; afterwards the oak, beech, and linden, were called oak, when they came to be diſtinguiſhed from the fir, pine, and yew, which in like manner would be called fir. Particular names could proceed only from a minute examination of each ſpecies, and of courſe thoſe names would be increaſed in proportion as the works of Nature were more ſtudied, and better underſtood. To repreſent Nature, therefore, by general denominations, or genera, is to refer us back to the dark and infant ſtate of human knowledge.

Ignorance

Ignorance produced genera, but ſcience will ever continue to create proper names; and we ſhall not be afraid of increaſing the number whenever we have occaſion to delineate different ſpecies.

Under the generic name of rat ſeveral ſpecies of little animals have been compriſed and confounded; but we appropriate this name ſolely to the common rat, which is of a blackiſh colour, and lives in our houſes; they generally inhabit barns and granaries, from whence, when food is ſcarce, they invade our dwellings. The rat is a carnivorous, or, if the expreſſion may be allowed, an omnivorous animal; he prefers hard ſubſtances to ſoft ones, he gnaws wool, linen, and furniture of all ſorts; eats through wood, makes holes and hiding places in walls, ceilings, and behind wainſcoats, from whence he iſſues in ſearch of food, and frequently returns with as much as he can drag along, forming, eſpecially when he has young to provide for, a magazine of the whole. The females bring forth ſeveral times in the year, though moſtly in the ſummer, and have five or ſix at a time. They love warmth, and in winter they generally ſhelter themſelves near chimnies, or among hay and ſtraw. In defiance of cats, poiſon, and traps, theſe animals multiply ſo much

much as frequently to do conſiderable damage. In old country-houſes, where great quantities of grain are kept, and where neighbouring barns and hay-ſtacks favour their retreat, they often become ſo numerous that the inhabitants are under the neceſſity of quitting their dwellings, unleſs they happen to devour each other, and this is no uncommon thing when they are ſtraightened for proviſions; in caſe of a famine being occaſioned by their numbers the ſtrong kill the weak, open their heads, firſt eat the brains, and then the reſt of the body: the next day hoſtilities are renewed in the ſame manner, nor do they ſuſpend their havock until the majority are deſtroyed; and this is the reaſon why, in a place that has been for ſome time infeſted with rats, they ſeem to diſappear of a ſudden, and return not for a long time. It is the ſame with field-mice, whoſe prodigious increaſe is checked ſolely by their cruelties to each other when proviſions become ſcarce. Ariſtotle attributes their ſudden deſtruction to rains, but rats are not expoſed to the weather, and field-mice know well how to ſecure themſelves from its effects, for their ſubterraneous habitations are not even moiſt.

Rats are as laſcivious as voracious; they have a kind of yelp in their amours, and when they

they fight they cry. They prepare a bed for their young, and almoſt immediately provide them with food; and when they firſt quit their hole the mother watches, defends, and will even fight the cats to ſave them. A large rat is more miſchievous, and almoſt as ſtrong as a young cat; its fore-teeth are long and ſtrong; and as the cat does not bite hard, but is obliged to depend upon her claws, ſhe muſt not only be vigorous but well experienced to conquer. The weaſel, though ſmaller, is yet a more dangerous enemy, becauſe he can follow the rat into its hiding places: the combat between theſe two is often ſharp and long, from their ſtrength being nearly equal, but their manner of fighting is different. The rat can only wound by ſnatches, and with his fore-teeth, which are more calculated for gnawing than biting, and have but little ſtrength; whereas the weaſel bites fiercely with his whole jaw, and inſtead of letting go ſucks the blood thro' the wound, and therefore the rat always falls a victim to this formidable enemy.

There are many varieties in this ſpecies, as there are in all which have numerous individuals. Beſide the common rat, which is nearly black, there are ſome brown, grey, reddiſh, and quite white. The white rat, like all

all animals perfectly white has red eyes. The whole ſpecies, with all its varieties, appear to be natives of temperate climates, and have been diffuſed in much greater abundance over warm countries than cold ones. Originally they had none in America, but were tranſported with the firſt European ſettlers, and where they encreaſed ſo faſt as to become the peſt of the colonies, and where indeed they had no enemies but the large ſerpents which ſwallowed them up alive. The European ſhips have alſo carried them into the Eaſt Indies, all the iſlands of the Indian Archipelago, and into Africa, where they are now found in great numbers. In the north they have never multiplied beyond Sweden, and thoſe which are called Norway and Lapland rats, are animals of a different ſpecies.

SUPPLEMENT.

IT is aſſerted by Pontoppidan, that rats cannot live farther north than Norway, and that thoſe on the banks of the ſouth ſide of the river Vorman, very ſoon die if they are taken to the north,

north, which he attributes to the exhalations of the ſoil. From the Vicomte Querhoënt I underſtand that rats multiplied ſo faſt on their firſt introduction to the Iſle of France, as even to compel the Dutch to leave it: they have been ſomewhat leſſened by the French, but they ſtill remain in great numbers. He adds, that when a rat has reſided ſome time in India he acquires a very ſtrong ſmell of muſk; and this is confirmed by M. la Boullaye-le-Goux in his voyages. The Dutch voyagers alſo ſay there are ſcented rats in Madura.

THE MOUSE.

THE Mouſe is much ſmaller than the rat, more numerous and more generally diffuſed. Its inſtinct, temperament, and diſpoſition is the ſame; and it differs only from its weakneſs, and the habits which it thereby contracts. Timid by nature, and familiar from neceſſity, fear and want are the ſole ſprings of its actions. It never leaves its hiding place but to ſeek for

food; nor does it go from houſe to houſe, like the rat, unleſs forced; nor is it near ſo miſchievous; its manners are mild, and to a certain degree it may be tamed, but is incapable of attachment; how indeed is it poſſible to love thoſe who are perpetually laying ſnares for us! Though weak he has more enemies than the rat, from whom he has no means of eſcape but his agility and minuteneſs. The owls, birds of prey, cats, weaſels, and even rats, make war upon mice, while man, by ſnares and other means, deſtroy them by thouſands. But for their immenſe fecundity they could not ſubſiſt; they bring forth at all ſeaſons, ſeveral times in the year, generally have five or ſix at a time, and which in leſs than fifteen days are ſufficiently ſtrong to ſhift for themſelves. As they ſo ſoon attain perfection, their duration of life muſt be ſhort, a circumſtance which muſt heighten our ideas of their prodigious multiplication. Ariſtotle tells us, that he put a pregnant mouſe into a veſſel with plenty of corn, and that he ſoon after found 120 mice all ſprung from the ſame mother.

Theſe little animals are not ugly, they have much vivacity and acuteneſs in their looks; nor is there any foundation for that horror ſome people hold towards them, but the little ſurpriſes and incon-

inconveniences they ſometimes occaſion. All mice are rather white under the belly, ſome are quite white, others more or leſs brown or black. The ſpecies is generally ſpread over Europe, Aſia, and Africa; but it is ſaid they had no mice formerly in America, and that, though now ſo very numerous, they were originally brought from the old Continent. Certain it is that this little animal, while it fears human ſociety cloſely attends it, and this probably from its natural appetite for bread, cheeſe, bacon, oil, butter, and other kinds of food which man prepares for himſelf.

THE FIELD-MOUSE.

THIS animal ſometimes called the mulot, is leſs than the rat, but larger than the common mouſe. It is not to be found in houſes, but lives in woods and fields. It has very large and prominent eyes; and it differs alſo from the rat and mouſe in the colour of its hair, which is tolerably white under the belly, and

a reddiſh brown on the back; they are very generally and abundantly diffuſed, eſpecially in hilly countries. They appear to be a long time in attaining their full growth, as they vary conſiderably in ſize. The largeſt are better than four inches in length, and the ſmaller, which appears to be aged, are an inch ſhorter; and as they are found of all the intermediate ſizes there can be no room to doubt their being the ſame ſpecies. It was probably from ignorance of this fact that ſome naturaliſts diſtinguiſhed them into two ſpecies, calling the one the Great Field Rat, and the other the Field Mouſe. Ray, who firſt fell into this error, ſeems to acknowledge himſelf unacquainted with but one ſpecies; and though the ſhort deſcription he gives of two ſpecies appear to differ, yet we ought not to conclude that both exiſt, firſt, Becauſe he himſelf knew but one; ſecondly, Becauſe, notwithſtanding all my reſearches, I have been enabled to diſcover but one kind; thirdly, Becauſe Geſner, and other naturaliſts, ſpeak only of one, under the name of *mus agreſtis major*, which they affirm to be common; and becauſe Ray ſays the other kind, which he calls *mus domeſticus medius*, is alſo very common; ſince ſome of theſe authors muſt have ſeen both, if both were

were ſo very common; fourthly, Becauſe as in this ſame ſpecies large and ſmall individuals are found, that circumſtance might lead them to conſider the former as one, and the latter as another; and, laſtly, Becauſe the deſcriptions are in no reſpect complete; and we ought not to truſt ſuch vague characteriſtics to eſtabliſh a ſpecific difference.

The ancients, indeed, mention two ſpecies, the one under the denomination of *mus agreſtis major*, the other under that of *mus agreſtis minor*. Theſe two ſpecies are very common, and we are as well acquainted with them as the ancients were; the firſt is our Long-tailed Field-Mouſe; and the other, known by the name of the Short-tailed Field-Mouſe, but as it materially differs both from the rat and long-tailed field-mouſe, I have not followed the generic appellation, but adopted that of the Italian, and call it *campagnol*.

The long-tailed field-mice, as we have already intimated, are fond of dry and elevated grounds. They are to be found in great numbers in woods and in adjoining fields. They conceal themſelves in holes under bruſh-wood, or trunks of trees, in which they amaſs ſuch quantities of nuts and acorns that a buſhel has been found contained in one of them; and this

proviſion is not proportioned to the wants of the animal, but to the capacity of the place allotted for its reception. Theſe holes are generally more than a foot under ground, and often divided into two cells, the one for living in with their young, and the other as a granary. I have often witneſſed the conſiderable damage done by theſe animals. They will follow the furrow of a plough and take up all the new-ſown acorns, which they convey to their holes; and in a nurſery of trees they are more deſtructive than all the birds, and other animals put together. The only method I could ever find to prevent this evil, was to ſet traps at every tenth pace diſtance, through the whole extent of the new ſown ground. No other preparation is neceſſary than placing a roaſted nut under a flat ſtone, ſupported by a piece of ſtick, to which the nut muſt be faſtened; this they are very fond of, and will come eagerly to ſeize; but no ſooner do they touch it than the ſtone falls and cruſhes them to death. I have made uſe of the ſame expedient againſt the campagnol, which is alſo very deſtructive. When I firſt adopted this method, I deſired care might be taken to bring me all the animals that were caught in the traps, and it was with aſtoniſhment I found more than 100 were taken daily, and this in a

piece

piece of land conſiſting of not more than 40 acres. I obtained more than 2000 in this manner, from the 15th of November to the 8th of December; their numbers afterwards decreaſed gradually, till the hard froſts commenced, when they retire to their holes, and feed upon what they have collected. A number of years have elapſed ſince I firſt made this experiment, and which I always repeated when I ſowed trees, and never had reaſon to complain of its inefficacy. It is in autumn they chiefly abound; in ſpring they are not ſo numerous, for if their proviſions run ſhort during the winter the ſtrong devour the weak; they alſo eat the ſhort-tailed ſpecies, and ſeveral ſorts of birds, beginning always with the brains and finiſhing with the reſt of the body. I once put a dozen of theſe field-mice in a cage, and accuſtomed them to be fed every morning by eight o'clock; but neglecting them one morning for about a quarter of an hour, one of them had been eaten by the reſt: next day they devoured another, and in a few days only one remained; the others having been killed and in part devoured; even the one that ſurvived had his legs and tail mutilated.

The rat multiplies very faſt, but the increaſe of the long-tailed field mouſe is more conſiderable.

able. The latter brings forth more than once a year, and generally nine or ten at a time, while the rat ſeldom produces more than five or ſix. A peaſant, on my eſtate, took twenty-two out of one hole, conſiſting of two dams and twenty young ones.

This animal is very generally diffuſed over Europe. It is found in Sweden, and is called by Linnæus, *mus cauda longa, corpore, nigro flaveſcente, abdomine albo.* It is very common in France, Italy, and Switzerland. Geſner calls it *mus agreſtis major.* It is alſo in Germany and England, where it is called the field-mouſe. Its greateſt enemies are the wolf, fox, martin, birds of prey, and its own ſpecies.

THE WATER RAT.

THIS animal is about the ſize of a common rat, but in habits and diſpoſition more reſembles the otter than the rat. Like the otter it frequents freſh water; is found on the borders of rivers, rivulets, and ponds, and ſeldom feeds on any thing but

but fiſh, though he will ſometimes eat frogs, water inſects, and even the roots of plants. He has not, like the otter, membranes between his toes; an error which originated with Willoughby, and has been copied by Ray and other naturaliſts. Though every toe is ſeparated, he ſwims with facility, keeps a long time under water, and carries off his prey to eat upon the graſs or in his hole. Sometimes he is ſurpriſed in his hole by fiſhermen who are ſearching for craw-fiſh, whoſe fingers he bites, and then plunges into the water as his only place of refuge. His head is ſhorter, his noſe broader, his hair more erect, and his tail much larger than the common rat. Like the otter he avoids large rivers, or rather thoſe which are too much frequented. The dogs purſue it very furiouſly. He is never found in houſes or barns, nor does he wander ſo far from the borders of the waters as the otter, which is ſometimes found at a league diſtant upon land. The water-rat frequents not high grounds nor dry plains, but in moiſt and marſhy vallies they are very numerous. The females come in ſeaſon about the cloſe of winter, and bring forth in April, generally having ſix or ſeven in a litter; they may probably bring forth more often than once a year, but of this we have no certain knowledge.

Their fleſh is not abſolutely bad, being eaten by the peaſants in catholic countries during lent, as well as that of the otter. This ſpecies is found throughout Europe, the very extremities of the north excepted. If Bellon may be believed, they inhabit the banks of the Nile, but the figure he gives of it has ſo little reſemblance to our water rat, that there is great reaſon to ſuppoſe them different animals.

THE CAMPAGNOL.

THE Campagnol, or ſhort-tailed field-mouſe, is ſtill more common and generally diffuſed than the long-tailed kind. The latter generally prefers elevated grounds, while the former is found in woods, meadows, and even gardens. It is remarkable for the bigneſs of its head and ſhortneſs of its tail, which is not above an inch long. It digs holes in the earth, where it amaſſes corn, nuts, and acorns; the former of which it appears to prefer to every kind of food. About the month of July, when the

the corn begins to ripen they collect together from all quarters, and frequently do great damage by cutting the ſtalks to come at the ears; they alſo follow the reapers and pick up all the grain that falls. When the gleanings are exhauſted, they reſort to the new-ſown lands, and not unoften deſtroy the hopes of the ſucceeding year. At the end of autumn, and in winter, moſt of them withdraw into the woods, where they feed upon beech-maſt, nuts, and acorns. Some years they appear in ſuch great numbers that they would deſtroy every thing were they to continue for any length of time, but for want of food they eat each other, and are alſo deſtroyed by the long-tailed field mouſe, the fox, wild cat, martin, and weaſel. In its internal parts, this animal more reſembles the water-rat than any other; but externally it differs from him in many eſſential characters: Firſt, in ſize, the campagnol not being more than three inches long, whereas the water-rat is ſeven; ſecondly, by the dimenſions of its head and body, thoſe of the former being thicker in proportion than thoſe of the latter; thirdly, by the length of the tail, that of the campagnol exceeds not one third, while that of the water rat is nearly two thirds the length of its body; and laſtly, by appetite and inclinations, ſince

the former neither feeds upon fiſh nor plunges into the water, but lives upon grain, acorns, and bulbous roots. Their holes reſemble thoſe of the long-tailed field mouſe, and are often divided into two apartments, though they are leſs ſpacious and are not dug ſo deep. Several of them ſometimes live together. When the females are about to bring forth they collect graſs to make beds for their young. They produce in ſpring and ſummer, and generally from five to eight at a time.

THE GUINEA PIG.

THIS animal *(fig. 79.)* tho' a native of Braſil and Guinea, lives and breeds in temperate, and even in cold countries, provided it is taken care of and ſheltered from the inclemency of the weather. The Guinea-pig is frequently reared in France, and though very prolific is far from being numerous, the attention they require being poorly rewarded by any future profits derived

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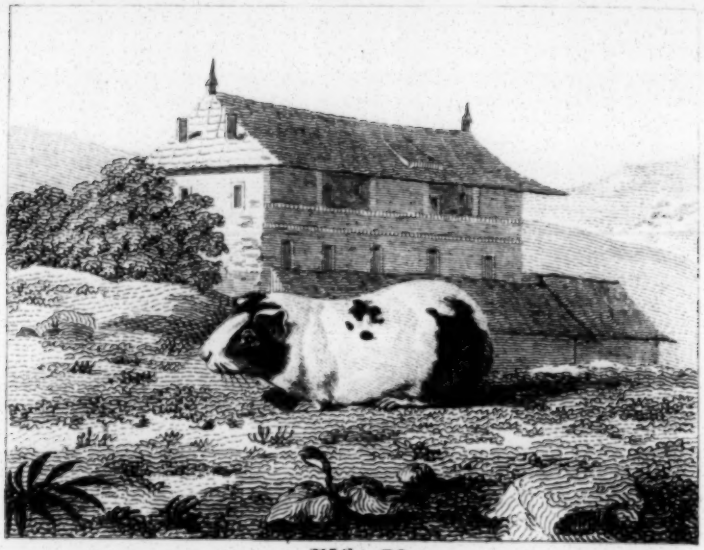


FIG: 79

Guinea - Pig

FIG: 80

Hedge Hog

FIG: 81

Shrewmouse

derived from them. Their ſkin is of little or no value, and their fleſh, though people do eat it, is very indifferent; a circumſtance which might in ſome meaſure be removed, by rearing them in warrens, where they might have air, ſpace to range in, and an agreeable choice of herbs. Thoſe kept in houſes have the ſame kind of bad taſte with the houſe rabbit, and thoſe kept in gardens during ſummer their fleſh is leſs diſagreeable, but ſtill inſipid.

Theſe animals are of ſo hot a nature that they begin to copulate ſo early as at five or ſix weeks old; their growth, however, is not completed before the end of eight or nine months, though their increaſe is in bulk and fat only after the ſixth, by which time all their ſolid parts are completely developed. The females go with young three weeks, and they have been known to bring forth at the age of two months. The firſt litter does not conſiſt of more than four or five, the ſecond five or ſix, and afterwards they will ſometimes have eleven or twelve. She does not ſuckle her young more than twelve days, and when the male returns to her, which he never fails to do three weeks after ſhe has littered, ſhe drives them from her, and if they perſiſt in following he often kills them. Thus theſe animals bring forth

forth at leaſt every two months; and as their young produce in the ſame period their multiplication is aſtoniſhing. In one year 1000 might be obtained from a ſingle couple; but their conſequent increaſe is checked by the various means of their deſtruction; they periſh from cold and wet; without reſiſtance they ſuffer themſelves to be devoured by the cats: the females, not having had time to form an attachment to their young, ſee them deſtroyed without attempting to protect them. They ſeem to have no diſtinct ſentiment but that of love, and when diſputing for a particular female they will ſhew themſelves ſuſceptible of anger, fight bitterly, and are ſometimes killed in the conflict before they will yield. They paſs their lives in eating, ſleeping, and love: their ſleep is ſhort, but frequent; they eat every hour, night and day, and indulge in their amours as often as they eat; they emit urine every minute, although they ſcarcely ever drink. They feed on all ſorts of herbs, eſpecially parſley, which they prefer to grain or bread; of apples, and other fruits, they are alſo very fond. Like the rabbit they eat little at a time, but precipitately, and very often. They grunt like a young pig; make a chirping noiſe when pleaſed with their females, and have a

ſharp

ſharp loud cry when hurt or irritated. They are very delicate, and ſo chilly that it is difficult to preſerve them through the winter, therefore they muſt be kept in a place which is thoroughly warm and dry. When they feel cold they aſſemble and preſs cloſe together, and in which ſituation they are ſometimes found dead. They are naturally mild and tame, ſeem equally incapable of doing harm or good, and never form any attachments. Mild by temperament, docile by weakneſs, almoſt inſenſible to every thing round them, they have the appearance of being ſo many living machines, merely poſſeſſed of abilities to propagate a ſpecies.

THE HEDGEHOG.

THE Hedge-hog *(fig.* 80.*)* poſſeſſes the power to defend itſelf without fighting, and to annoy without making an attack. Having little ſtrength, and no agility to eſcape his foes, he has received from Nature a prickly armour, with the power of rolling himſelf up like a ball, and preſenting from every part of his body

body a poignant weapon of defence. His fears prove an additional ſecurity, for the ſmell of his urine, which he throws out when attacked, is always ſufficient to diſguſt his enemy. Thus dogs content themſelves with barking at the hedge-hog, and never ſhew an inclination to ſeize it. The fox, however, has the addreſs to maſter it, by contriving to wound its feet, from which the blood runs into its mouth, but from the weaſel, martin, polecat, ferret, or birds of prey, it has nothing to dread.

The females, as well as males, are covered with prickles, and the under parts of their bodies only are covered with hair; wherefore theſe arms, ſo uſeful to them againſt their enemies, are highly inconvenient in their amours, as they cannot unite, like other quadrupeds, but face to face, either upright or lying. They come in ſeaſon in ſpring, and bring forth at the beginning of ſummer. I have frequently had the mother and her young brought me in the month of June; their litters generally conſiſt of from three to five; they are white at firſt, and only the marks of their ſpines and prickles appear. Deſirous to rear ſome of them, I put a dam and her little family into a tub, with plenty of meat, bread, bran, and fruit, but, inſtead of ſuckling, ſhe devoured

devoured them one after another. I was ſurpriſed that ſo indolent an animal ſhould diſcover ſuch marks of impatience at confinement. An hedge hog, which had one day got into the kitchen, took ſome meat out of a ſmall kettle, and then defiled it with its excrement. I kept males and females in the ſame apartments, but though they lived they never coupled. I put ſeveral of them in my garden, where they did ſo little damage that it was hardly perceivable they were there; they lived upon the fallen fruits, and dug the earth to a ſmall depth with their ſnouts; they eat caterpillars, worms, beetles, and ſome roots; and they are alſo very fond of fleſh, which they devour either raw or roaſted.

In the country they are commonly found in the woods, under the trunks of old trees, in the clefts of rocks, and in vineyards. I do not believe they climb trees, as has been aſſerted, or make uſe of their prickles to carry off the fruit; they ſeize with the mouth every thing they eat, and though they are very numerous in our foreſts I never heard of one being ſeen upon a tree, but are always found in hollow places, or under moſs. They remain inactive all day, and only go about during the night. They ſeldom approach human habitations;

they prefer dry and elevated grounds, yet are ſometimes found in meadows. When touched they do not offer to eſcape or defend themſelves, either with their feet or teeth, but roll themſelves up, and are only to be made to extend by plunging them into cold water; they ſleep during the winter, and therefore if, as it is ſaid, they amaſs proviſions in ſummer, they would be entirely uſeleſs. They at no time eat much, and can exiſt a long time without any food. Like all other animals who ſleep in winter, their blood is cold; their fleſh is not good to eat, nor is their ſkin, which was formerly employed in the preparation of hemp, converted to any uſe.

According to ſome authors there are two ſpecies of the hedge-hog, one with a ſnout like a hog, and the other with a ſhort muzzle like a dog; but I know of but one, and of which there are even no varieties in our climates. This animal is pretty generally diffuſed; they are in every part of Europe, Lapland, Norway, and the other very cold countries excepted. Flacourt ſays there are hedge-hogs at Madagaſcar, where they are called Sora. The hedge-hog of Siam, mentioned by Father Tachard, ſeems to be another animal. Thoſe of America and Siberia evidently approach the

the neareſt to our common hedge-hogs, and laſtly, the hedge-hog of Malacca ſeems to be more of the porcupine than the hedge-hog.

THE SHREW MOUSE.

THE Shrew Mouſe *(fig.* 81.*)* ſeems to form a ſhade in the order of animals, and to fill up the interval between the rat and the mole, which though they reſemble each other in ſize, differ greatly in form, and are a totally diſtinct ſpecies. The ſhrew is ſmaller than the common mouſe, reſembles the mole in its ſnout, which is longer than the jaw-bones; in its eyes which, though larger than thoſe of the mole, are in the ſame manner concealed, and ſmaller than thoſe of the mouſe; in the number of its toes, having five on each foot, in its tail and legs, particularly the hind ones, which are ſhorter than thoſe of the mouſe; in its ears, and laſtly, in its teeth. This little creature has a ſtrong ſmell, peculiar to itſelf, and ſo offen-

ſive, that cats, though they chace and kill, will not eat it. This noiſome odour, and the averſion of the cats, moſt probably gave riſe to the notion that the ſhrew mouſe is a venomous animal, and that its bite is hurtful, particularly to horſes; but the truth is, that it is neither venomous nor capable of biting, for it cannot open its mouth ſufficiently wide to take in the double thickneſs of another animal's ſkin, which is abſolutely neceſſary in order to bite. Beſides the diſtemper among horſes attributed to the ſhrew mouſe, is a ſwelling proceeding from an internal cauſe, and therefore can have no relation to a bite.

The ſhrew mouſe, eſpecially in winter, fixes its reſidence in ſtables, hay-lofts, or barns; it feeds on grain, inſects, and putrid fleſh. It alſo reſides in woods and fields, where it lives on grain; it ſometimes conceals itſelf under moſs, the trunks of trees, in holes abandoned by moles, or in holes of a ſmaller ſize, which it digs for itſelf with its claws and ſnout. The ſhrew produces as many young at a time as the common mouſe, but not ſo frequently. Its cry is more ſharp, but it is not near ſo nimble, and as it ſees imperfectly, and runs ſlowly, there is very little difficulty in taking it. Their uſual colour is brown mixed with red,

though

though ſome are aſh coloured, and all of them are white under the belly. They are very common throughout Europe, but do not ſeem to exiſt in America. The animal of Braſil, which Margrave mentions as the ſhrew mouſe, and deſcribes with three black ſtripes upon the back, is larger, and appears to be of a different ſpecies.

THE WATER SHREW MOUSE.

THIS animal, though a native of theſe climates, was unknown to any of our naturaliſts, 'till M. Daubenton firſt diſcovered and deſcribed it, as in the Memoirs de l'Academie in 1756. To the former animal we have only to add, that this is taken near the ſource of fountains, as the ſun riſes and ſets; that in the day it remains concealed in the clefts of rocks, or in holes at the edges of rivulets; that it brings forth in ſpring, and has generally nine young ones at a time.

THE MOLE.

THE Mole, *(fig.* 82.*)* without being blind, has eyes ſo ſmall, and ſo concealed, that it can make but little uſe of ſeeing. In recompence Nature has ſupplied it with an ample portion of the ſixth ſenſe. Of all animals the mole is the moſt profuſely furniſhed with generic organs, and of courſe with the relative ſenſations. The ſenſes of hearing and feeling it enjoys in an eminent degree; a ſkin as ſoft as velvet, and its little paws, with five claws, are very different from other quadrupeds, and nearly reſemble the hand of a human being; they have great ſtrength in proportion to the ſize of their bodies, and ſo ſtrong and reciprocal an attachment ſubſiſts between the male and female, that they ſeem to have a dread of, and a diſguſt to, all other ſociety. They enjoy the mild habitudes of ſolitude and repoſe; the art of ſecuring themſelves, of inſtantaneouſly forming an aſylum, of extending it, and of obtaining a plentiful ſubſiſtence without a neceſſity for relinquiſhing it. Such are the

the diſpoſitions, manners and talents of this animal, and they doubtleſs are preferable to qualities more brilliant, which are perhaps more incompatible with happineſs than even an abſolute deprivation of ſight.

The mole ſhuts up the entrance to its retreat, which it ſeldom leaves, unleſs forced by heavy rains, or it becomes demoliſhed by man. It prefers cultivated grounds, and is never to be found in thoſe which are muddy, hard, or ſtony; and delights in a ſoft ſoil, well ſupplied with eſculent roots, inſects and worms, of which its principal nouriſhment conſiſts. As they ſeldom come above ground they have but few enemies, and eaſily elude the purſuit of animals ſtronger and ſwifter than themſelves. Their greateſt calamity is an inundation, and when that happens they are ſeen ſwimming in great numbers, and uſing every effort to ſave themſelves by reaching the higher grounds, but the greateſt part of them periſh, as well as their young who remain in the holes. Were it not for ſuch accidents, from their great fecundity, they would be extremely incommodious to farmers. They couple at the beginning of ſpring, and their young ones are found as early as May. They generally have four or five at a time, and it is eaſy to diſtinguiſh the mole-hill under which

which they have littered, as they are more elevated, and made with greater art than the reſt. I am inclined to think they bring forth more than once a year; this however is certain that young ones are met with from April to Auguſt, which, however, may be owing to ſome coupling later in the year than others.

The hole in which they depoſit their young is formed with ſingular ſkill and deſerves a particular deſcription. They begin by raiſing the earth and forming a tolerable ſpacious apartment, leaving diviſions or pillars at certain diſtances to prevent the roof from falling, all round which they beat and preſs the earth, interweave it with roots and plants, and render it ſo firm that the water cannot penetrate it; the apartment in the hillock is above the level of the ground, and therefore leſs ſubject to accidents from ſlight inundations; under this they form another kind of hill, upon the top of which they lay graſs and leaves as a bed for their young. Here they lay ſecure from wet, and the female proceeds to make their retreat equally free from danger; for all round this internal hillock ſhe pierces holes ſtill deeper, which part from the middle apartment like rays from a centre, and extend about fifteen feet in every direction; into theſe the mother makes her

ſubterraneous

ſubterraneous excurſions, and from them ſupplies her young with roots and inſects; but they contribute ſtill more to the general ſafety, for as the mole is very quick of hearing, the inſtant ſhe finds her habitation attacked ſhe takes to one of the burrows, and unleſs the earth be dug away by ſeveral men at once, ſhe and her young always make good their retreat.

Some authors have aſſerted that the mole and badger ſleep the whole winter, but that this is not true we have already obſerved, with reſpect to the badger, from the traces which he leaves upon the ſnow; and ſo far is the mole from ſleeping the whole winter, that ſhe continues to raiſe the earth then as well as in ſummer; and it is almoſt proverbial with the peaſantry of France, that "when the mole is at work a thaw is at hand." They are indeed, fond of warm places, and the gardeners often catch them round their beds in the months of December, January, and February. This animal is never to be met with in barren deſerts or cold climates, where the ground is frozen for the greateſt part of the year. The Siberian mole, with green and yellow hair, is of a different ſpecies from our mole, which abounds only from Sweden to Barbary; at leaſt from the ſilence of travellers we may preſume it is

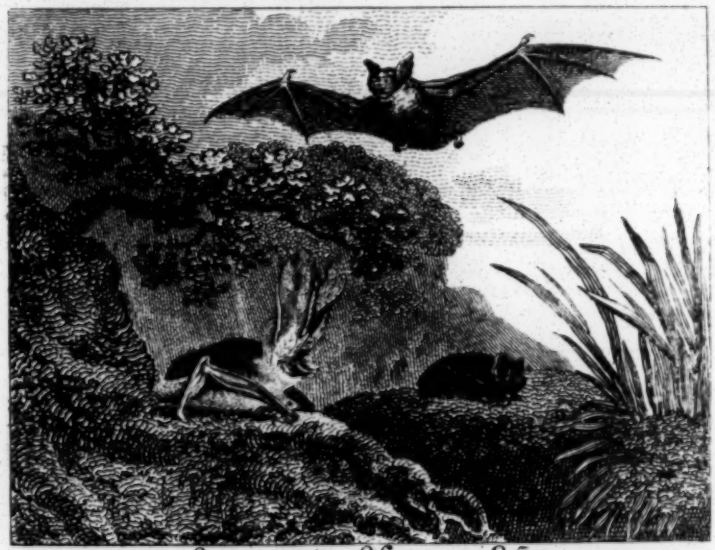
not an inhabitant of hot climates. The moles of America, particularly the red ones, are alſo different. The Virginian mole, however, is not unlike ours, except in the colour of the hair, which is mixed with a deep purple. In our common moles there are only two or three varieties; ſome are more or leſs brown or black, and ſome few we have ſeen entirely white. Seba mentions, and gives a figure of a mole with black and white ſpots *, which he found in Eaſt Frieſland, and which was rather larger than our moles.

I received from M. Sonnerat the ſkin of what he calls the Mole of the Cape of Good Hope *(fig. 83.)* which bears a near reſemblance to the common moles, excepting the fore-feet and the head, which is much larger, and has a ſnout ſomewhat like the Guinea Pig. Its hair is dark brown, with yellow tips, which gives it a bright ſhade, and its tail is covered with long hairs of a yellowiſh white. Upon the whole, I am inclined to think that it cannot be conſidered as a ſimple variety, but that it is a different ſpecies.

* This mole, ſays he, was found on the highway. It is larger than the common mole, from which it differs in no reſpect but the colour of the ſkin, which is diverſified on the back and belly with black and white ſpots, and theſe intermixed with a few grey hairs as fine as ſilk. The ſnout of this animal is long, and covered with hair of a conſiderable length; and its eyes are ſo ſmall that it is difficult to diſtinguiſh them.

82. FIG. 83.

Mole *Cape D°*



84. FIG. 86. 85.

Long Ear'd *Common Bat.* *Pipistrell.*

Bats.

THE BAT.

THOUGH all beings are equally perfect in themſelves, as coming from the hands of the Almighty Creator, yet, in their relation to man, ſome appear more accompliſhed, and others more imperfect or deformed. The former are thoſe whoſe figures are agreeable, and which we eſteem complete, becauſe all their parts are well connected, their members proportioned, and their functions eaſy and natural. The latter are thoſe whoſe qualities are offenſive to us, whoſe nature deviates from other beings, and whoſe forms are different to thoſe from which we drew our firſt ſenſations, and thoſe ideas which ſerve to model our judgments. The head of a man upon the neck of an horſe, its body covered with feathers, and terminated with the tail of a fiſh, repreſents not a picture of enormous deformity, but from being an aſſemblage of the moſt incongruous diverſities of nature. An animal, like the bat, which is

half quadruped and half bird, and which, in fact, is neither the one nor the other, is a kind of monſter, becauſe it unites the attributes of two ſuch different genera, and reſembles none of thoſe models preſented to us in the grand claſſes of Nature. It is an imperfect quadruped, and a ſtill more imperfect bird; as a quadruped it ſhould have four feet, and as a bird it ſhould have feathers and wings. In the bat the fore-feet are, properly, neither feet nor wings, tho' the animal uſes them for the purpoſe of flying and moving along the ground; they are two ſhapeleſs extremities, of which the bones are of an enormous length, and connected by a membrane neither covered with feathers nor hair, they are a kind of ſmall wings or winged paws, in which we only ſee one claw about an inch in length, and with which the other four, though very long, muſt act in conjunction, as they have no peculiar movements, no ſeparate functions; they are a kind of hands ten times larger than the feet, and four times larger than the whole body of the animal; in a word, they are parts which have rather the appearance of caprice and accident, than a regular production. This membrane covers the arms, forms the wings, or hands, of the animal, is united to the ſkin of the body, and, at

even

the ſame time envelopes not only its legs, but even its tail, which by this whimſical junction becomes, as it were, one of its toes. To theſe incongruities, theſe diſproportions of the body and members may be added the ſtill more ſtriking deformities of the head. In ſome ſpecies the noſe is hardly viſible; the eyes are ſunk near the tip of the ear, and confounded with the cheeks; in others the ears are as long as the body, or elſe the face twiſted into the form of an horſe-ſhoe, and the noſe covered with a kind of cruſt. Many of theſe animals have four ſubſtances from their heads, reſembling ears, and of all of them the eyes are ſmall, obſcure, and covered; their noſes are ill-formed, and their mouths extend from ear to ear; they ſhun ſociety and the light, inhabit dark places, which they quit only for nocturnal excurſions, return before the break of day, and in a manner glue themſelves againſt the walls. Their motion in the air is leſs a flight than an uncertain flutter, which they execute by ſtruggles and in a very awkward manner; they raiſe themſelves from the ground with difficulty, and never ſoar to a great height; their flight being far from either rapid or direct, but is performed by haſty vibrations in an oblique and winding direction; in their flight they, however, ſeize gnats, moths,

moths, and other nocturnal inſects. Theſe they ſwallow entire, and in their excrements we meet with the remains of wings and other dry parts which they were unable to digeſt.

Having one day deſcended into the grottoes of Arcy, I was ſurpriſed to find, upon a ſpot covered with alabaſter, and in a place ſo gloomy, a kind of earth ſo very different; it conſiſted of blackiſh matter ſeveral feet in width and breadth, and compoſed almoſt entirely of the wings and legs of inſects, as if immenſe numbers had collected there and periſhed together. This heap, however, was nothing more than the dung of bats, amaſſed, probably, from their having made that their favorite reſidence for many years; for in the whole extent of the grottoes, which is more than the eighth of a league, I ſaw no other ſimilar maſs; I therefore concluded they had fixed upon this ſpot, becauſe a ſmall gloomy light reached it from the top, and that they had not proceeded farther, leſt they ſhould have been too much enveloped in obſcurity.

Bats have nothing in common with birds, except the faculty of flying, and therefore muſt be claſſed among quadrupeds; but as the ability to fly implies a great degree of force in the ſuperior and anterior parts of the body, the pectoral

pectoral muſcles of the bat are more ſtrong and fleſhy than thoſe of any other quadruped, a circumſtance in which they have ſome reſemblance to birds; in every other reſpect their conformation, both external and internal is different. The lungs, heart, organs of generation, and all the other viſcera, except the prominent ſexual diſtinction, which is ſimilar to that of a man or a monkey. Like quadrupeds the bats are viviparous, and have teeth and nipples. It has been affirmed that they bring forth only two at a time, that they ſuckle their young, and even carry them when they fly. It is in ſummer they couple and bring forth, for during winter they are in a ſtate of torpor; ſome cover themſelves with their wings as with a cloak, and ſuſpend themſelves by their hind legs in ſubterraneous caverns; others cling to walls, or conceal themſelves in holes. When they retire they do it in numbers, and collect together to defend each other from the cold; and they paſs the whole winter, from the end of autumn to the ſpring, without either food or motion. They can ſupport hunger better than cold; and though they can ſubſiſt many days without food, they are nevertheleſs carnivorous, for when opportunity ſerves, they will devour

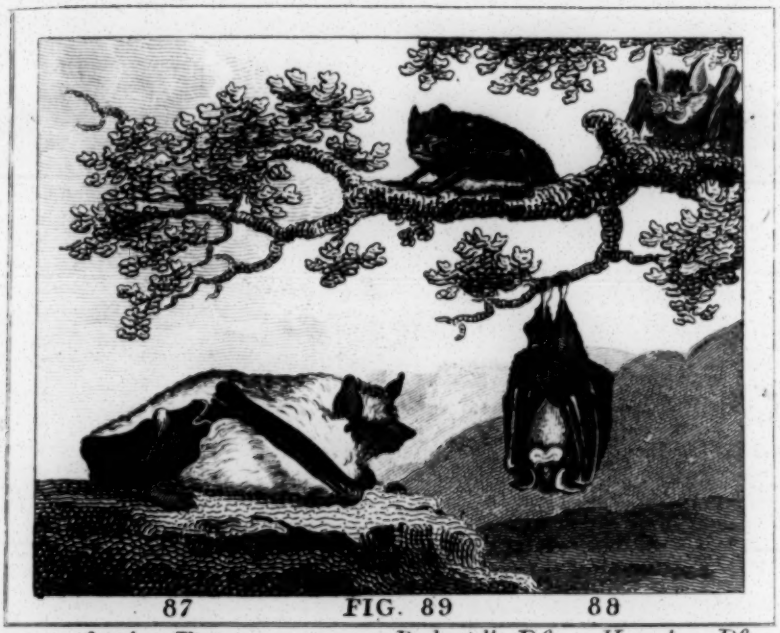
devour meat of all kinds, whether raw or roaſted, freſh or corrupted.

There were but two ſpecies of bats deſcribed as natives of our climate, until M. Daubenton diſcovered ſix others equally common and abundant, which renders it aſtoniſhing they ſhould have remained ſo long unnoticed. The whole of them are widely different, and never dwell together. The firſt is the common bat, *(fig.* 86.*)* which we have already deſcribed. The next is the long-eared, *(fig.* 84.*)* which is perhaps more numerous than the common bat; its body is more diminutive, its wings are ſhorter, its ſnout ſmaller and more pointed, and its ears large beyond all proportion. The third ſpecies I call the noctule, from the Italian word *notula*, was not known, though very common in France, and more frequently met with than the two preceding. It is found under the roofs of houſes, caſtles, and churches, and in hollow trees; it is almoſt as large as the common bat, its ears are broad and ſhort, its hair of a reddiſh caſt, and its voice ſharp and piercing. The fourth is diſtinguiſhed by the name of the crotine; it is ſmaller than the common bat or the noctule, and nearly the ſize of the long-eared; its ears, however, are ſharp and pointed, its wings are black, and its body of a deep brown.

brown. The fifth I call the Pipiſtrelles, *(fig.* 85.*)* from the Italian word *pipiſtrello* which ſignifies bat. Of all the bats this is the ſmalleſt and leaſt ugly, though the upper lip is ſwelled, its eyes ſmall and hollow, and its forehead covered with hair. The ſixth is named the Barbaſtelle, *(fig.* 89.*)* from *barbaſtello* another Italian word, ſignifying a bat. This is nearly of the ſame ſize as the long-eared; its ears are as broad but not ſo long. The name barbaſtelle is the more applicable to it, as it ſeems to have whiſkers, which nevertheleſs are only protuberances over the lips; its ſnout is ſhort, noſe flat, and its eyes cloſe to its ears. The ſeventh, and laſt, is diſtinguiſhed as the Horſe-ſhoe bat, *(fig.* 88.*)*. The face of this animal is ſingularly deformed, of which the moſt apparent feature is a membrane in the form of an horſe-ſhoe round the noſe and upper lip; this ſpecies is very common in France, among the walls and in the vaults of old ruinous caſtles, and of which there are large and ſmall, but in form, and in every other particular, they are ſimilar. As I have not met with any of the intermediate ſizes, I cannot determine whether this difference is pruduced by age, or a permanent variety in the ſame ſpecies.

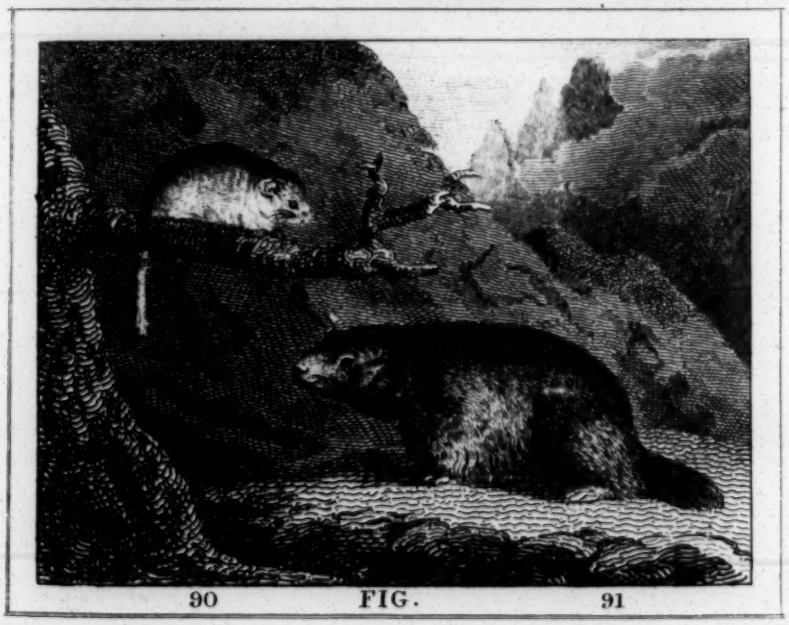
THE LOIR.

OF the Loir, or Great Dormouſe, or as ſome naturaliſts have termed it, the Fat Squirrel, there are three ſpecies, which, like the marmot, ſleep during the winter; namely, the Loir, the Lerot, and the Muſcardin, or common Dormouſe. Theſe three ſpecies have been confounded together although they are very different, and eaſily diſtinguiſhed. The Loir is nearly of the ſize of the ſquirrel, and like that animal, has its tail covered with long hair; the lerot is not ſo large as a rat, has very ſhort hair on its tail, except at the extremity, where there is a tuft of long hair; the dormouſe is not bigger than the common mouſe, its tail is covered with a longer hair than the lerot's, but ſhorter than the loir's, and it alſo has a tuft at the extremity. The loir differs from the other two, by having black ſpots about its eyes, and the dormouſe by having white hair upon its back.



87 FIG. 89 88

Serotine Bat *Barbastelle D°* *Horseshoe D°*



90 FIG. 91

Dormouse *Alpine Marmot*

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back. They are all white or whitiſh under the neck and belly; the white of the lerot is beautiful, that of the loir more dark, and that of the dormouſe has a yellow hue in all the inferior parts.

There is no propriety in the aſſertion that theſe animals ſleep during winter, for they are not in a ſtate of natural ſleep, but in a torpor produced by the coldneſs of the blood, by which they loſe the uſe of their ſenſes and members. Their internal heat does not exceed the temperature of the air. When the heat of the air is ten degrees above the freezing point, their heat is exactly the ſame. The ball of a ſmall thermometer I have plunged into the bodies of ſeveral living lerots, and always found the heat of their bodies was nearly equal to the temperature of the air; and ſometimes when applied to the very heart, I have obſerved the thermometer fall from half a degree to a whole one, the temperature of the air being at eleven. Now it is well known that the internal heat of man, and of the generality of quadrupeds, at all times exceeds thirty, and therefore there is little reaſon to be ſurpriſed that theſe animals, whoſe heat is ſo ſmall, ſhould become torpid, when their little internal heat ceaſes to be aſſiſted by the external heat of the air; a cir-

circumſtance that naturally happens when the thermometer is not above ten or eleven degrees above the point of congelation. This is the real cauſe of the torpor of theſe animals, a cauſe which has been overlooked, although it extends to all animals which ſleep during winter. Alike are its effects upon theſe animals, the hedge-hog and bats, though I have never had the opportunity of trying them upon the marmot, I am perſuaded its blood is not leſs cold, ſince like them it is ſubject to a torpor during winter.

The torpor continues as long as the cauſe which produced it, and ceaſes with the cold. A few degrees of heat above ten or eleven is ſufficient to re-animate them, and if kept in a warm place during winter they do not become torpid, but go about and eat and ſleep, from time to time, like other animals. When they feel the cold they crowd cloſe together, and roll themſelves up like balls, in order to preſent a ſmaller ſurface to the air, and to preſerve ſome warmth. It is thus they are found during winter in hollow trees, and in holes of walls expoſed to the ſouth: in theſe they lie without motion, on moſs and leaves, and when taken, if toſſed or rolled about they never ſtir, or ſhew any ſigns of life; it is by a mild and

gradual

gradual heat alone they are to be recovered, for if carried ſuddenly near a fire they periſh. Though in this ſtate they are without motion, though their eyes are ſhut, and they ſeem to be deprived of all their ſenſes, yet they feel pain when it is very acute; this they teſtify by a contraction, and a little hollow cry, which they will repeat ſeveral times; hence it is plain the internal ſenſibility muſt ſubſiſt, as well as the action of the heart and lungs, yet it is to be preſumed that theſe vital motions act not with the ſame force and power while in the torpid as in the uſual ſtate. The circulation, probably, is not performed then but in the larger veſſels; the reſpiration is ſlow and feeble, the ſecretions are very ſcanty, and perſpiration muſt be nearly annihilated, ſince they could not paſs ſeveral months without eating were they to loſe as much of their ſubſtance by perſpiration as they do when they have an opportunity of repairing it by the taking of ſuſtenance; they do loſe ſome part, however, ſince in very long winters they die in their holes. Perhaps, indeed it is not the duration but the ſeverity of the cold that cuts them off, as they ſoon die if expoſed to an intenſe froſt. What induces me to believe that it is not from waſte of ſubſtance they periſh in long winters, is their being very fat

fat in autumn, and equally ſo on their reviving in ſpring; this abundance of fat being an internal ſubſtance, ſufficient to ſupply what they loſe by perſpiration. Beſides, as cold is the ſole cauſe of their torpor, and they never fall into that ſtate but when the temperature of the air is beyond the tenth or eleventh degree, they often revive during the winter, for in that ſeaſon there are frequently hours, and even days, in which the liquor will be found at the twelfth, thirteenth, or fourteenth degree, and during this mild weather the dormice quit their holes in ſearch of food, or rather eat what they had amaſſed the preceding autumn.

Ariſtotle aſſerted, and he has been followed by ſucceeding naturaliſts, that dormice paſs the whole winter without eating, and that during this period of abſtinence they become very fat, being more nouriſhed by ſleep alone than other animals by food. This is both untrue and impoſſible. In its torpid ſtate, which laſts four or five months, it could only fatten by the air it breathes; allowing part of this air to be converted into nouriſhment, could ſo conſiderable an increaſe reſult from it? Would it be ſufficient to recompence the waſte by perſpiration? Ariſtotle might have been led into this error by the winters in Greece being very mild,

mild, where the dormice do not ſleep continually, but taking nouriſhment every time they were revived by the warmth they might become fat, though in a torpid ſtate. The truth is they are always fat, eſpecially in autumn and ſummer. Their fleſh is not unlike that of the guinea-pig. They were reckoned delicacies by the Romans, who reared great numbers of them. Varo deſcribes the method of making warrens for them, as does Appicius of dreſſing them in the beſt manner. Their inſtructions, however, have been neglected, either from a diſguſt to a loir, from his near reſemblance to a rat, and from his fleſh being unpalatable. By peaſants who had eaten them I have been told that it is hardly preferable to that of the water-rat.

The loir has a conſiderable reſemblance to the ſquirrel in its natural habits; it lives in foreſts, climbs up trees, and leaps from branch to branch, though not ſo nimbly as the latter, becauſe his legs are not ſo long, and he is as remarkable for being fat as the other is for being ſlender. Nuts, and other wild fruits, compoſe the uſual nouriſhment of both; the loir likewiſe eats ſmall birds, which he takes in their neſts. He does not, like the ſquirrel, neſtle on the upper parts of trees, but makes a bed

bed of moſs in the trunks of thoſe which are hollow; he alſo ſhelters himſelf in the clefts of rocks, and always prefers dry places. He avoids moiſture, drinks little, and rarely deſcends to the ground; but there is a material difference between him and the ſquirrel, as the latter is eaſily tamed, but the loir always remains wild. They couple about the end of ſpring, and the females bring forth in ſummer, generally producing four or five at a time. Their growth is ſpeedily accompliſhed, and it is aſſerted that they do not live more than ſix years. In Italy, where they ſtill eat them, the inhabitants dig pits in the woods, which they line and cover with ſtraw and moſs; for theſe they chuſe a dry ſpot, ſheltered by rocks and expoſed to the ſouth; to which the loirs reſort in great numbers, and the people find them there in a torpid ſtate, about the end of autumn, when they are fitteſt to eat. They are full of courage, and will defend their lives to the laſt extremity; their fore-teeth are very ſtrong, and they bite violently; they have no fear of the weaſel nor ſmall birds of prey; they baffle the attempts of the fox, by mounting to the tops of the trees, nor have they any very formidable enemies but the martins and wild cats.

This

This ſpecies is not very much diffuſed; it is not met with in the cold climates, ſuch as Lapland and Sweden; at leaſt the naturaliſts of the north do not mention it; the ſpecies they deſcribe being the muſcardin, the ſmalleſt of the three; neither, I preſume, are they to be met with in very hot climates, travellers being ſilent about them. There are few or none of them in open countries like England; they require a temperate climate, and the coun ry covered with wood. We meet with them in Spain, France, Italy, Germany, and Switzerland, where they live in foreſts ſituated on riſing grounds, and not on the tops of mountains, like the marmot, which, though ſubject to a torpor from the cold, ſeems to delight in froſt and ſnow.

THE LEROT.

THE loir lives in foreſts and ſeems to ſhun our habitations, but the Lerot, (called ſometimes the Middle Dormouſe, at others the Garden Squirrel) on the contrary, inhabits

our gardens, and is ſometimes to be found in our houſes; this ſpecies is likewiſe more numerous and more generally diffuſed; and few indeed are the gardens which are not infeſted with them. They neſtle in the holes of walls, climb up trees, chooſe the beſt fruits, and devour them as they begin to ripen. Peaches ſeem to be their favourite fruit, and whoever wiſhes to preſerve them muſt take pains to deſtroy the lerot. They likewiſe climb up pear, plumb, and apricot trees, and in a ſcarcity of fruits, they eat almonds, nuts, and even leguminous plants. Theſe they carry off in great quantities to their holes, which they dig in the earth, in well cultivated lands, where they make themſelves beds of herbs, moſs and leaves. The cold ſtupifies, and the heat revives them; eight or ten of them are ſometimes found in one place, in a ſtate of torpor, all huddled together, and rolled up in the midſt of their hoard of proviſions. They couple in ſpring and bring forth in ſummer. They commonly have five or ſix young at a time; they are very quick of growth, but do not engender till the ſecond year; their fleſh is not eatable like that of the loir; they have the ſame diſagreeable ſmell as the houſe rat, whereas the loir has no bad ſmell, nor do they ever become

ſo fat as the latter. This animal is found in all the temperate climates of Europe, and even in Poland and Pruſſia, but they do not appear to exiſt in Sweden and the more northern countries.

THE DORMOUSE.

OF all the ſpecies of the rat, the Dormouſe *(fig. 90.)* is the leaſt ugly. It has brilliant eyes, and a full tail, which is rather white than red. It never lives in houſes, and ſeldom in gardens, but like the loir, chiefly frequents the woods, and ſhelters itſelf in the hollows of old trees. This ſpecies is by no means ſo numerous as that of the lerot. The dormice are always found alone in their ſeveral holes, and I had much difficulty to procure a few of them; they however, ſeem to be pretty common in Italy, and not unknown in the northern climates, ſince they are compriſed by Linnæus in his liſt of Swediſh animals; but they do not appear to exiſt in England, for Mr. Ray in his Synopſis, who had ſeen it in Italy, ſays the ſmall dormouſe

found in England is not red upon the back like the Italian muſcardin, and that it probably belongs to a different ſpecies. In France it is the ſame as in Italy, and is juſtly deſcribed by Aldrovandus in his Hiſtory of Quadrupeds: but he adds that there are two ſpecies in Italy, one of which is ſcarce, and has the ſmell of muſk, the other more general without any particular odour, and that at Bologna they are both called *muſcardino* from their reſemblance in figure and ſize. Of theſe two ſpecies we only know the latter, as the dormice of France have no ſmell either good or bad. Its fleſh, however, is unfit to eat, and it never becomes ſo fat as the loir.

The dormoúſe becomes torpid with cold and revives in mild weather, and like the loir and lerot hoards up nuts and other dry fruits. It forms its neſt upon trees, like the ſquirrel, though generally lower among the branches of nut-trees, and underwood; the neſt is made of herbs interwove, is about ſix inches in diameter, and is only open at the top. Many countrymen have aſſured me that they have found the neſts of dormice in coppices and in hedges, that they were ſurrounded with leaves and moſs, and that each neſt contained three or four young ones. So ſoon as they grow up they quit their neſts,

neſts, ſhelter themſelves in the hollows or under trunks of trees, where they repoſe, lay up proviſions, and ſleep through winter.

THE SURMULOT.

THIS ſpecies of rat has been known but for a few years, and is not mentioned by any naturaliſt except M. Briſſon, who calls it the Rat of the Woods, but as it bears a greater reſemblance to the field-mouſe, in colour and habitudes, than to the rat, I have termed it the Surmulot, or large Field-mouſe. This animal is more ſtrong and miſchievous than the rat; it has reddiſh hair, long naked tail, the backbone is arched like that of a ſquirrel, its body is much thicker, and it has whiſkers like a cat. It is but a few years ſince this ſpecies has been ſpread in the neighbourhood of Paris; from whence they came is not known, but they have multiplied prodigiouſly, which is not wonderful when it is conſidered that they produce from twelve

twelve to nineteen young ones at a time. They were firſt diſcovered at Chantilly, Marly, and Verſailles. From M. le Roi I received a great number of them both alive and dead, and he alſo favoured me by communicating the remarks he had made upon this new ſpecies. The males are larger, ſtronger, and more miſchievous than the females. When purſued, or endeavoured to be taken, they turn again and bite the ſtick or hand which touches them; their bite is ſharp and dangerous, for it is immediately followed by a conſiderable ſwelling, and the wound, though ſmall, does not ſoon heal. They bring forth three times in a year, ſo that two individuals may produce 36 in twelve months. Some of the females which I received were with young, and as I kept them in cages, two or three days before ſhe brought forth I obſerved them buſily gnawing the wood of their cages, and putting the pieces into a kind of order, made beds for their little ones.

The ſurmulot, in ſome of its habits, reſembles the water-rat. Though they take up their reſidences any where, they ſeem to prefer being in the banks by the water; the dogs alſo chace them with the ſame furious eagerneſs as they do the water-rat. When purſued, and they can equally take to the water, or ſhelter

ſhelter themſelves in a thorny thicket, they prefer the former, plunge in without dread, and ſwim with great facility. This particularly happens when they cannot regain their burrows, for, like the field-mouſe, they dig holes in the earth, or occupy thoſe made by rabbits. They may alſo be taken by means of ferrets, who purſue them into their holes with the ſame ardour as they do the rabbit. Theſe animals paſs the ſummer in the country; they live principally upon fruits or grain, yet are carnivorous, devouring young hares, rabbits, partridges, and other birds, and when they get into a hen-rooſt they deſtroy, like the polecat, more than they can eat. About November the females and the young ones quit the fields, and proceed in troops to barns, where they commit infinite havock, by deſtroying the ſtraw, conſuming the grain, and infecting every thing with their ordure. The old males remain in the fields, each in his reſpective hole, where they accumulate acorns, beech-maſt, &c. filling it to the very edge, and remaining themſelves at the bottom. They do not become torpid in the winter, like the dormouſe, but come out of their holes every fine day. Thoſe which reſide in barns drive away all the

mice

mice and rats; and it has even been remarked, that the common rats are leſs frequent in the environs of Paris ſince the ſurmulot became ſo numerous.

THE ALPINE MARMOT.

OF all modern writers Geſner has done moſt to enlarge our knowledge in Natural Hiſtory. Aldrovandus is little more than his commentator, and thoſe of leſs repute are his mere copyiſts; we ſhall not, therefore, heſitate to follow him in treating of the Marmot, *(fig. 91.)* which are natives of his own country (Switzerland) and of which he muſt have been better informed than thoſe who may have accidentally kept a few in their houſes. And as his remarks perfectly coincide with thoſe obſervations we had an opportunity to make, we can have no reaſon to doubt but that what he farther relates is equally to be depended upon. The marmot, when taken young, is eaſily tamed,

tamed, and to be nearly as much ſo as our domeſtic animals. It is ſoon learnt to perform feats with a ſtick, to dance, and to readily obey the voice of its maſter. Like the cat it has an antipathy to dogs; when it has become familiar in the houſe, and finds itſelf protected by its maſter, it will attack the largeſt dog, and faſten on them with his teeth. It is not quite ſo large as a hare, but more ſtout, and has great ſtrength joined to peculiar agility. He has four ſtrong teeth in the front, with which he bites terribly; but unleſs provoked he neither attacks dogs nor men; but if care is not taken he will gnaw furniture, and even make holes through wooden partitions. As his thighs are ſhort, and his toes formed like the bear, he often ſits erect, and walks with eaſe upon his hind feet; he puts food to his mouth with the fore paws, and eats like a ſquirrel. He runs much ſwifter up hill than on a plain; climbs trees, and mounts the clefts of rocks, or contiguous walls, with great facility; ſo much ſo that it is ſaid the Savoyards, who are the general chimney-ſweepers of Paris, learned from the marmot their trade. They eat indiſcriminately whatever is given them, whether fleſh, bread, fruit, herbs, roots, pulſe, or inſects, but of milk and butter they are particularly fond;

and, though leſs inclined to theft than the cat, they induſtriouſly endeavour to get into a dairy, where they will lap great quantities of milk, purring all the while like a cat when ſhe is pleaſed. Milk, indeed, is the only liquid for which they ſhew any inclination, as they ſeldom drink water, and refuſe wine.

There ſeems to be a combination of the bear and the rat in the form of the marmot, yet it is not the *arctomys*, or *rat-bear* of the ancients, as Perrault, and ſeveral others, have imagined. Its noſe, lips, and form of the head, are like thoſe of the hare; it has the hair and claws of the badger, the teeth of the beaver, the whiſkers of the cat, the eyes of the loir, the legs of a bear, with a tufted tail and ſhort ears. The hair on its back is a reddiſh brown, more or leſs dark, and very harſh, that on the belly is reddiſh, and more ſoft. Its voice reſembles that of a young dog when played with or careſſed, but when irritated or frightened it raiſes a loud and ſhrill cry. It is a very clean animal, and retires, like the cat, upon neceſſary occaſions; but, like the rat, it has a very ſtrong diſagreeable ſmell, eſpecially in the ſummer. In autumn it is loaded with fat, though all parts of the body are never equally ſo. The back and reins are loaded with

with fat, which is firm and ſolid; therefore the marmot would make very good eating, if it did not retain a diſagreeable ſmell, which would require the ſtrongeſt ſeaſoning to conceal.

This animal, which delights in the regions of froſt and ſnow, and which is only found on the higheſt mountains, is, of all others, moſt liable to be benumbed with the cold. About the end of September, or beginning of October, it retires to its hole, and appears not again till the beginning of April. His retreat is formed with precaution, and furniſhed with art. It is rather wider than long, and very deep, ſo that it will hold ſeveral of them without crowding, or injuring the air they breathe. Their feet and claws appear as if deſigned for digging, and with which they remove the earth with great facility, throwing it behind them as they proceed. The form of their hole reſembles the letter Y; the two branches having an opening which terminates in one wherein they reſide. As the whole is made on the declivity of a mountain there is no part on a level but the innermoſt apartment. One branch of the Y ſlopes downward, and in which they void their excrements, and the other ſlopes upwards, and ſerves them as a door to go in and out. The inner part is warmly lined with moſs and

hay, of which they make an ample proviſion during ſummer. It is even aſſerted that this is a public work, that ſome cut the fineſt graſs, that others collect it, and that they take their turns in conveying it to the hole; upon this occaſion, it is added, that one of them lies upon his back, permits the hay to be heaped upon his belly, keeps his legs extended, and in this manner the others drag him by the tail to their common retreat; and this practice is aſſigned as the reaſon for the hair being generally worn away from their backs. But it appears more probable, their being conſtantly employed in digging up the earth is the cauſe of that appearance. Be this as it may, certain it is they dwell together, and that they labour in common to make their habitations, in which they paſs three-fourths of their lives; to it they retire in ſtormy or rainy weather, and at the approach of danger; they never go out but in the fineſt weather, and even then to no great diſtance: on theſe occaſions one ſtands as centinel upon an elevated place, while the others are ſporting in the fields, or cutting the graſs for hay, and no ſooner does he perceive a man, an eagle, a dog, &c. than he gives the alarm, by a kind of whiſtle, and is himſelf the laſt to enter the cell.

They

They make no proviſion for winter, as if they foreſaw that ſuch a precaution would be uſeleſs; but when they perceive the firſt approaches of the ſeaſon, in which they will be in a torpid ſtate, they cloſe up the entrance of their dwelling, and which they effect with ſo much ſolidity, that it is much more eaſy to dig up the earth in any other part. They are at this time very fat, and ſome of them will weigh twenty pounds; in this plight they remain three months, after which they waſte by degrees, and are quite thin by the end of winter. When diſcovered in their retreats they are rolled up like balls, and covered with hay; in this ſtate they may be taken away, and even killed, without ſhewing any ſenſe of pain. The fatteſt are generally taken for food, and the young ones kept for taming. Like the dormouſe they are revived by a gradual heat, and thoſe kept warm in a houſe never become torpid, but are as lively in the winter as at any other time. We have already obſerved that the torpid ſtate is occaſioned by the congelation of the blood, and it is remarked in the Philoſophical Tranſactions, No. 397, that when in this ſtate of torpor, that the circulation of the blood is ſlow, the ſecretions languid, and that the blood not being renewed by freſh acquiſitions

of

of chyle, is then without ſerum. Beſides it is uncertain whether they remain for ſeven or eight months in a torpid ſtate as moſt authors pretend. Their burrows are deep, and they live together in great numbers; they therefore muſt retain their heat ſome time, and may then feed on the graſs they have treaſured up. M. Attman, in treating on the animals of Switzerland, ſays, that the hunters let the marmots remain three weeks or a month unmoleſted in their cells; that they never dig for them in mild weather, as without this precaution the animals awake, and penetrate deeper in the earth; but that on opening their cells in hard froſts they find them in ſo torpid a ſtate, as to be carried off without difficulty; it may therefore be concluded that they, in all reſpects, reſemble the dormice, and that if they are longer in a torpid ſtate, it is becauſe the winter is longer in the climates which they inhabit.

Theſe animals produce but once a year, and rarely more than three or four at a time. They grow very faſt, their lives do not extend beyond nine or ten years, and their ſpecies is neither numerous nor much diffuſed. The Greeks knew it not, or at leaſt have not mentioned it. Pliny is the firſt who takes notice of it among the Latins, under the name of *mus Alpinus*, or Alpine rat;

rat; and, indeed, though there are many other ſpecies of rats in the Alps, there is none ſo remarkable as the marmot, or like it dwells upon the brow of the loftieſt mountains; all the other ſpecies fix their abode in the vallies, or at leaſt on the ſides of the lower hills or mountains; beſides the marmot never deſcends to the lower grounds, but ſeems particularly attached to the Alpine heights, where it chooſes ſuch places as are expoſed to the ſouth or eaſt in preference to the north or weſt. They are alſo found on the Appenine and Pyrenean mountains, and on the higheſt German ones.

The Bobak of Poland, to which M. Briſſon, and after him Meſſ. Arnault, of Nobleville, and Selerne, have given the name of Marmot, differs from that animal in colour, and alſo in the number of toes, having five on the fore-feet. From which we may conclude that the *bobak*, or Poliſh marmot, the *mouax*, or Canadian marmot, the *cavia*, or marmot of Bahama, and the *cricet*, or Straſburgh marmot, are different ſpecies from the marmot of the Alps.

SUP-

SUPPLEMENT.

I HAVE received the drawing of a *monax*, or marmot of Canada, from Mr. Collinſon, but which appears to differ very much from the Alpine marmot, its head is not of the ſame ſhape, and leſs covered with hair, as is alſo the tail, and which is conſiderably longer. The *whiſtler* mentioned by Baron Hontan, as found in Canada, is moſt probably of this ſpecies, as his deſcription nearly anſwers to it. He ſays it is called whiſtler by the Canadians, becauſe in fine weather they whiſtle at the mouth of their holes; which we have before remarked is done by our Alpine marmots, eſpecially by the one appointed to ſtand as a guard.

An animal in Kamtſchatka is called marmot by the Ruſſian travellers; they ſay its ſkin is beautiful, and that at a diſtance it reſembles the plumage of a bird; and add, that it uſes its fore-feet like a ſquirrel, and feeds on roots, berries, and cedar nuts; the latter however preſumes ſome

ſome error, as the real cedar bears cones, and the other trees ſo called, berries.

There is another ſpecies which comes from the Cape of Good Hope; this was firſt ſpoken of by M. Allamand, but more fully deſcribed by M. Pallas and M. Voſmaer, who had one of them alive at Amſterdam; he ſays it is known at the Cape by the name of the Rock Badger, merely becauſe it lives under the earth and in rocks, but has no reſemblance to that animal, and, as Kolbe juſtly remarks, it more reſembles the marmot than the badger, we have called it the Marmot of the Cape. M. Voſmaer obſerves in his deſcription of it, that it was about the ſize of a rabbit, had a large belly, fine eyes, and black hair upon its eye-brows, above which it had a few long black hairs that turned towards the head, and long whiſkers. Its colour was grey, or rather a yellowiſh brown intermixed with black hairs, much darker upon the head and back than upon the belly, which as well as the breaſt was whitiſh, and it had a white ſtroke acroſs the ſhoulders which ended at the top of the fore-legs.

THE BEAR.

THERE is no animal ſo generally known, about which naturaliſts have differed ſo much as the Bear, their doubts and even contradictions, with reſpect to the nature and manners of this animal, ſeems to have ariſen from their not diſtinguiſhing their different ſpecies, and conſequently aſcribing to one the properties belonging to another. In the firſt place, the land-bear *(fig. 92.)* muſt not be confounded with the ſea-bear, or as it is commonly called the white-bear *(fig. 93.)*, or bear of the frozen ſea; theſe animals being very different both in the form of their bodies and natural diſpoſitions. The land bears muſt be alſo diſtinguiſhed into two ſpecies, the brown and the black, becauſe having neither the ſame inclinations nor natural appetites, they cannot be conſidered as varieties of the ſame ſpecies. Beſides, there are ſome land-bears that are white, but which, although they reſemble the ſea-bear in colour, differ from it in every

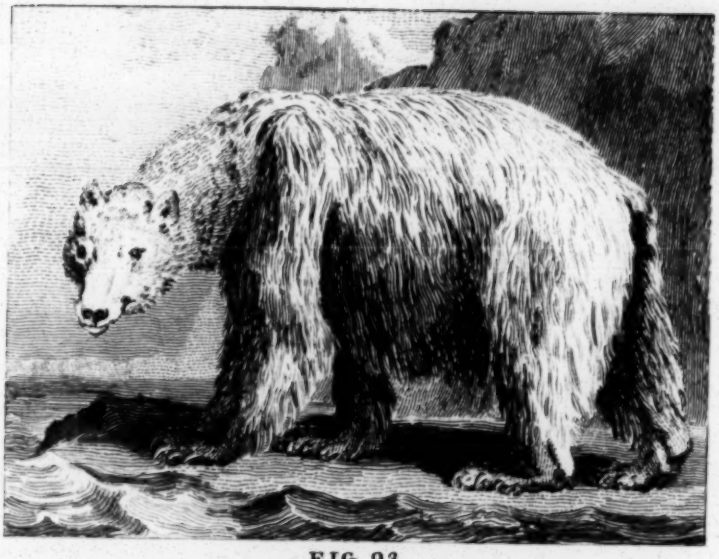

FIG. 93.

White Bear.

FIG. 92.

Brown Bear.

every other particular. Theſe white land-bears we meet with in Great Tartary, Muſcovy, Lithuania, and other northern countries. It is not the rigour of the climate which renders them white during the winter, like the hares and ermines, for they are brought forth white and remain ſo all their lives. We ought, therefore, to conſider them as a fourth ſpecies, if there were not alſo found bears with an intermixture of brown and white, which denotes an intermediate race between the white land-bear, and the brown or black, conſequently the former is only a variety of one of thoſe ſpecies.

We frequently meet with the brown bear in the Alps, but the black-bear very rarely. But in the foreſts of the northern countries of Europe and America, the latter are very common. The brown one is both fierce and carnivorous, but the black-bear is only wild, and conſtantly refuſes to eat fleſh. Of this we cannot give a more ſtriking teſtimony than what M. du Pratz relates in his hiſtory of Louiſiana. "The Bear, ſays he, (ſpeaking of the black one) appears in Louiſiana in winter, becauſe the ſnows which cover the northern countries prevent him from procuring his uſual food, which conſiſts of roots, acorns, and vegetables in general; but milk and honey form his favourite repaſt,

and when he meets with thoſe articles he will ſooner die than relinquiſh them. In defiance of the prevailing notion that the bear is carnivorous, I maintain, with every perſon of this province, and the circumjacent countries, that he is not ſo. Theſe animals have never been known to devour men, nor even to eat butcher's meat, notwithſtanding their multitude, and the exceſſes of hunger which they often ſuffer. While I reſided at the Natches, one winter was ſo ſevere in the northern regions, that the bears flocked from them in great numbers; ſo great indeed that they ſtarved each other, and were very meagre. In the night they were frequently ſeen roaming into houſes and farm-yards, which were not properly ſhut, where they might have feaſted upon meat, but they never touched it, nor devoured aught but ſuch grain as they could pick up. If they had poſſeſſed a carnivorous diſpoſition, it muſt have ſhewn itſelf upon ſuch a preſſing occaſion. They never kill animals to devour them; and were they in reality carnivorous, they would not abandon their own ſnowy regions, where they might find men and animals at diſcretion, to ſearch for fruit and roots, an aliment which carnivorous tribes reject." M. du Pratz adds in a note, that ſince writing the above paſſage, he had learned, with certainty,

certainty, that in the mountains of Savoy there are bears of two ſorts, the one black, like thoſe of Louiſiana, not carnivorous, and the other red, which are as much ſo as wolves.

De Hontan remarks in his travels that the bears of Canada are very black, but by no means dangerous, and that they never attack the human ſpecies unleſs when fired at and wounded. In another place he adds that the reddiſh ones are exceedingly miſchievous, and that they uniformly attack the huntſmen, whereas the black ones fly from them. According to Wormius there are three kinds in Norway. The firſt *(Breſſdiur)* is very large, not altogether black but rather browniſh, is not deſtructive, but lives ſolely on herbs and leaves of trees; the ſecond *(Ildgierſduir)* is ſmaller, blacker, and carnivorous, frequently attacking horſes and other animals, eſpecially in autumn; the third *(Myrebiorn)* is ſtill ſmaller and miſchievous, he feeds on ants and delights in demoliſhing their hillocks. It has been remarked, adds this author (but without any proof) that theſe three kinds copulate together and produce intermediate ſpecies; thoſe which are carnivorous attack flocks like the wolf, killing the whole and eating only one or two; that they alſo eat wild fruits, and that when the fruit of the

the ſervice tree is in ſeaſon, they are the moſt dangerous, becauſe it ſets their teeth on an edge and which can only be allayed by blood or greaſe. But the generality of what Wormius relates on this head is highly equivocal, for we have no example of animals whoſe appetites are ſo different as the two firſt, the one living on herbs, and the other fleſh and blood, copulating together and producing intermediate ſpecies. Beſides he mentions the black bear as carnivorous, and the brown one as frugivorous, which is inconſiſtent with truth, and contradicted by facts. It is alſo to be obſerved that Father Rzaczynſki, of Poland, and M. Klein, of Dantzick, in treating of the bears of their own countries, admit of but two ſpecies, the black and the brown or red; deſcribing two kinds of the latter, the one large and the other ſmall. They ſtate the black bears to be rare, and the brown ones very common; that the black kind are the largeſt and feed on ants, and that the largeſt of the red or brown are moſt carnivorous and deſtructive. Theſe teſtimonies, as well as thoſe of Du Pratz and de la Hontan are contradictory to what Wormius aſſerts. Indeed it ſeems to be a certain fact that the red or brown bears which are found not only in Savoy, but on the high mountains,

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in the vaſt foreſts, and in almoſt all the deſarts of the earth, devour live animals and even carcaſſes when in a putrid ſtate. Black bears are ſeldom found in cold countries, but the red or brown ones we find in the cold, temperate, and even in the ſouthern regions. In Greece they were common, and to heighten their ſhews the Romans introduced them from Lybia. They are now to be met with in China, Japan, Arabia, Egypt, and as far as the iſland of Java. Ariſtosle alſo ſpeaks of white land bears, but conſiders this difference in colour as accidental, and originating from a defect in generation. Thus the bear is a reſident in all deſart, mountainous, and woody countries; but in open, populous, and cultivated regions he is a ſtranger. There are none in England or France, except poſſibly a few in the moſt unfrequented mountains of the latter.

The bear is not only a ſavage but a ſolitary animal; he takes refuge in the moſt unfrequented places, and dangerous precipices of uninhabited mountains; he chooſes his den in the moſt gloomy parts of the foreſts, in a cavern hollowed out by time, or in the decayed trunk of ſome old tree. Thither he retires alone, and paſſes part of the winter without eating or ever ſtirring abroad. He is not, however,

however, deprived of ſenſation, like the dormouſe or marmot, but being exceedingly fat towards the end of autumn, the time he retires, he ſeems rather to ſubſiſt on the exuberance of his former fleſh, and does not quit his retreat until he is nearly waſted. We are told that the male quits his den towards the expiration of forty days, but that the female remains four months, by which time ſhe has brought forth her young; that they ſhould not only ſubſiſt but nouriſh their young, without taking any food for ſuch a length of time I think highly improbable. I allow that when with young they are exceedingly fat, and alſo, that being covered with very thick hair, ſleeping the greateſt part of the time, and taking no exerciſe, they muſt loſe little by perſpiration. But, if it be true, that the males are impelled by hunger to quit their retreats at the end of forty days, it is not natural to imagine that the females ſhould not feel greater want of food, after bringing forth and ſuckling their young ones, unleſs we ſuppoſe that, like cats, they ſometimes devour their offspring, of which, in my opinion, there is no probability. Beſides, at preſent we only ſpeak of the brown bear, the males of which do, in reality, devour their new-born cubs when they find them; but the

females

females ſeem to love their offspring with a ferocious ardour. When they have brought forth their fury is more violent and dangerous than that of the males. Nothing do they dread to combat, or expoſe themſelves to, in defence of their young, which are not, as the ancients have ſaid, without form when born, but attain their full growth nearly as ſoon as other animals; before they leave the womb their formation is perfect, and if the fœtus, or young cub, ſeems at firſt glance to be unformed, it is merely becauſe there is a want of proportion in the body and members of the grown bear; and that the fœtus, or new-born animal, is more diſproportioned than the aged, is well known to be the caſe in all ſpecies.

The bears couple in autumn; and the female is ſaid to be more ardent than the male. It is pretended that ſhe lies upon her back to receive him, that ſhe folds him with her paws, and holds him a long time, but the fact is they copulate like other quadrupeds. Bears, while confined with a chain, have been ſeen to copulate and produce, but how long the females go with young is not accurately known. Ariſtotle has limited it to 30 days, a fact which has never been contradicted, and which, as I cannot authenticate, I will neither affirm

nor deny, but aſſign my reaſons for thinking it doubtful; which are, firſt, becauſe the bear is a large animal, and the larger the animal the longer time is required for its formation in the womb; ſecondly, becauſe the young bear is very ſlow of growth, follows the mother, and requires her ſuccour for a year or two; thirdly, becauſe the female produces only from one to four, and never more than five, a circumſtance common to all large animals who produce but few and carry them long; fourthly, becauſe the bear lives from 20 to 25 years, and the time of geſtation, and that of growth, are uſually proportioned to the duration of life. From theſe analogous principles I conclude that the bear carries her young ſeveral months. Be this as it may, the mother takes the greateſt care of her offspring. She brings forth in winter, previous to which ſhe provides a bed of hay and moſs at the bottom of her den, and ſuckles her young till they are able to follow her in the ſpring. The male and female reſide not together, but have ſeparate retreats, and that at a diſtance from each other. When they cannot find a cavern for a den they break and collect branches, which having placed they cover with herbs and leaves, ſo as to render it impenetrable by the rain.

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The voice of the bear is a kind of harſh deep murmur, which when enraged is heightened by the grinding of the teeth. Highly ſuſceptible of anger, which is always furious and often capricious. However mild, and even obedient, he may appear to his maſter, he ought to be treated with diſtruſt and circumſpection; nor upon any account ſhould he be ſtruck upon the noſe, or on the parts of generation. He may be taught to ſtand on his hind legs, and to dance in a rude and awkward meaſure; but for this it is neceſſary he ſhould be taken young, and held in conſtant reſtraint. An old bear is not to be tamed, nor even held in awe, and ſhews himſelf, if not intrepid, at leaſt fearleſs of danger. The wild bear turns not out of his path, nor offers to ſhun the ſight of man; and yet, it is ſaid, that by a certain whiſtle he is ſo far ſurpriſed and confounded as to riſe upon his hind feet. This is the time to ſhoot and endeavour to kill him, for when only wounded in an attack he darts with fury on his foe, and claſping him with his fore paws is ſure to ſtifle or ſtrangle him, unleſs immediately aſſiſted.

Bears are chaced and taken in ſeveral manners; in Sweden, Norway, Poland, &c. the leaſt dangerous method, it is ſaid, is to in-

toxicate them, by pouring brandy, or other ſpirits, upon honey, which being their favorite food they ſearch for in the hollows of trees. In Louiſiana and Canada, where the black bears are common, and where they reſide in the decayed parts of old trees, they are taken by ſetting fire to their retreats, which, as they climb trees with great eaſe, are ſometimes 30 or 40 feet high. If this attack is made upon a female with her young ſhe deſcends firſt, and is killed before ſhe reaches the ground; as the cubs follow they are eaſily ſecured, by throwing a nooſe round their necks, and are carried home, either to rear, or kill for proviſions. The fleſh of the young is delicate and good, and that of the old one eatable; but as the latter is mixed with an oily fat, the paws alone, which are more firm, can be conſidered as a dainty.

The hunting of the bear, without being dangerous, is highly profitable, when attended with ſucceſs; of all coarſe furs their ſkins are the moſt valuable, and the quantity of oil procured from one bear is conſiderable. The fleſh and fat are boiled together, and then the oil is ſeparated; "this done," ſays Du Pratz, "it is purified by throwing into it, while very hot, a large quantity of ſalt and water; a thick

ſmoke

ſmoke ariſes which carries off the diſagreeable ſmell of the fat; when the ſmoke is evaporated they pour the greaſe, while ſtill warm, into a pot, where it is left to ſettle for eight or ten days, at the expiration of which a clear oil is found ſwimming at the top; this is taken off with ladles, is equally good with the beſt olive oil, and is uſed for the ſame purpoſes. Under it remains a lard as white as hog's-lard, but rather more ſoft, and which has neither a diſagreeable taſte or ſmell." This account of M. du Pratz is perfectly acceded to by M. Dumont, who adds, that the ſavages of Louiſiana carry on a conſiderable traffic with the French in this oil from the bears, that it never loſes its fluidity but in intenſe froſts, when it becomes clotted, is of a dazzling whiteneſs, and is then eaten upon bread like butter. The author of the Dictionnaire du Commerce ſays, that good bear's-greaſe ſhould be grey, viſcid, and of a diſagreeable flavour, and when very white it is adulterated with ſuet. It is uſed as a topical remedy for tumours, rheumatic and other complaints, and many people have a high opinion of its ſalutary properties.

From their great quantity of fat, bears are excellent ſwimmers. In Louiſiana, Dumont ſays, they croſs that great river with perfect eaſe; they

they are very fond of the fruit of the *guiacana*, the trees of which they climb, and ſit aſtride upon the branches to eat it; they are alſo partial to potatoes and yams. In autumn they are ſo fat that they can hardly walk, at leaſt are unable to run as faſt as a man; on their ſides and thighs, it is ſometimes ten inches thick. The under part of their paws is large and ſwelled, and when cut there iſſues out a white milky juice. This part ſeems compoſed of glands reſembling ſmall nipples, and this is the reaſon, when confined to their dens during winter, they continually ſuck their paws.

The bear enjoys the ſenſe of ſeeing, hearing, and feeling, in great perfection, although compared with his ſize, his eye is ſmall, his ears ſhort, and his ſkin coarſe and covered with a quantity of hair. His ſmell, is, perhaps, more exquiſite than that of any other animal; the internal ſurface of his noſe being very extenſive and excellently calculated to receive impreſſions from odoriferous bodies. Their legs and arms are fleſhy, like thoſe of man, and they ſtrike with their paws in the ſame manner as he does with his fiſts; they have alſo a ſhort heel bone, which makes part of the ſole of the foot; in their kind of hands the thumb is not ſeparated, and the largeſt finger is on the outſide;

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but whatever rude reſemblances they may have to the human ſpecies, they only render them the more deformed without giving them the ſmalleſt ſuperiority over other animals.

SUPPLEMENT.

SINCE the publication of the original work I have received the following particulars from M. de Muſly, a major in the ſervice of the States General. He ſays, that at Berne they have ſeveral bears in a kind of domeſtic ſtate, they are kept in large ſquare ditches lined at the ſides and bottom with ſtone, and where they have room to walk about; they have dens made for them, which are alſo paved, on a level with the bottom of the ditch, theſe are divided into two by walls, and are occaſionally ſhut with iron gates; troughs of freſh water are ſet for them in each ditch, and holes are left in the pavement ſufficient to ſet up large trees on an end. Thirty-one years ſince two young brown bears were brought thither from Savoy,

Savoy, the male of which was killed by a fall from one of the trees into the ditch about two months ago (this account is dated October 17, 1771), and the female is ſtill alive. At the age of five years they began to generate, and from that time have regularly come in ſeaſon in the month of June, and the female has brought forth in January. The firſt time ſhe had only one, and from thence ſhe has had from one to three, but never more; the three laſt years ſhe had one each time, and the man who looks after her thinks ſhe is now pregnant. When firſt whelped they are yellow, and white round the neck, and have not the ſmalleſt appearance of bears; they are blind four weeks; they meaſure about eight inches at firſt, and at the end of three months fourteen or fifteen; they are then almoſt round, and have a ſharp pointed ſnout; they are by no means ſtrong until they are full grown, before which time the white hair is quite gone, having decreaſed by degrees, and the yellow is changed into a brown.

The male and female ſometimes fight furiouſly, growling horribly at each other, but when in ſeaſon the latter generally gets the better. The ditches in which theſe two bears were formerly kept, being to be filled up, they were

were neceſſarily ſeparated for a few hours while removing to the other ditches prepared for them; on their meeeting again they raiſed themſelves on an end, and embraced each other in a kind of rapture; and upon the death of the male, the female was much affected, and refuſed to eat for ſeveral days. But this attachment is not common to them, for unleſs brought up and fed together from very young cubs they cannot bear each other, yet after living thus together, the ſurvivor will not admit the approaches of another. They are very fond of climbing the trees put into the ditches, which are green larches, and placed there every May. They are commonly fed with rye-bread ſoaked in water; and they will eat all ſorts of fruits. When the female is near her time, ſhe is furniſhed with plenty of ſtraw, which ſhe appropriates for her uſe, and then the male is removed, leſt he ſhould devour the young ones; they are allowed to remain with their mother for the ſpace of ten weeks, when they are removed, and fed for ſome time with bread and biſcuit.

M. de Muſly afterwards informed me that the female they had thought pregnant was ſupplied with ſtraw at the neceſſary time, but though ſhe made a bed and reſted upon it for

three weeks, ſhe did not bring forth any thing; therefore the laſt time ſhe brought forth ſhe had but one, and was at the age of thirty-one years. He likewiſe adds, that there are brown bears on Mount Jura, in Franche-compte, and in the county of Gex, which come into the plains in autumn, and do great damage in the cheſnut woods."

There are two ſpecies of bears in Norway, one of which is much ſmaller than the other, in both there are different colours, ſuch as dark and light brown, grey, and every ſhade of white, at leaſt ſo ſays Pontoppidan; and alſo that they retire to the dens which they have prepared in October. Being very formidable, when wounded, three or four hunters uſually go together, and as he eaſily kills large dogs, they uſe ſmall ones, which run under his belly and ſeize him by the genitals; when nearly overpowered, he places himſelf againſt a tree, and throws tuft or ſtones at his foes, until he is diſpatched.

In the menagery of Chantilly there is an American bear, with fine, ſoft, ſtraight black hair, whoſe head is longer, and ſnout ſhorter than the bears of Europe. And M. de Bertram mentions a bear that was killed near St. John's river

river in East Florida, which was seven feet long, weighed 400lbs. and from which 60 Paris pints of oil were drawn.

THE BEAVER.

AS man becomes civilized and improved, other animals are repressed and degraded. Reduced to servitude, or treated as rebels, and dispersed by force, all their societies are dissolved, and their talents rendered nugatory; their arts have disappeared, and they now retain nothing but their solitary instincts, or those foreign habitudes which they have acquired by example or human education. For this reason there remain no traces of their ancient talents and industry, except in those countries where man is a stranger, and where, undisturbed by him for a long succession of ages, they have freely exercised their natural talents, brought them to their limited perfection, and been capable of uniting in their common designs. The beaver seems to be the only re-

maining monument of that intelligence in brutes, which though infinitely inferior in principle to that of man, ſuppoſes common projects and relative views; projects which having ſociety for their baſis, and for their object the conſtruction of a dike, the erection of a reſidence, or the foundation of a republic, imply ſome method of underſtanding each other, and of acting in concert.

The beaver is ſaid to be among quadrupeds what the bee is among inſects. Of ſocieties there are three ſpecies in nature which we ought to conſider attentively before we begin to compare them; namely, The free ſociety of man, to which, next to God, he is indebted for all his power; the conſtrained ſociety of large animals, always rendered tranſitory by the human ſpecies; and the forced ſociety of certain little animals, which, coming into exiſtence at one time, and in the ſame place, are obliged to live together. An individual, ſolitary as he comes from the hands of the Creator, is a ſterile being, whoſe induſtry is confined to the uſe of his ſenſes; nor is man himſelf, in a ſtate of pure nature, unaſſiſted by the aids of ſociety, capable of multiplying or of being edified. All ſociety, on the contrary, neceſſarily becomes fruitful, provided it be

compoſed

compoſed of beings of the ſame nature. From the neceſſity of ſeeking or avoiding each other, a ſucceſſion of common movements will follow, from which frequently ſome work will reſult that has the appearance of having been conceived, conducted, and executed with intelligence. Thus the labours of the bee, which in a given place, ſuch as a hive, or the hollow of an old tree, forms its own cell; thoſe of the Cayenne fly, which is not only the architect of its own cell but the hive which is to contain it, are labours purely mechanical, and ſuppoſe no intelligence, no concerted project, no general views, but nothing more than phyſical neceſſities, a reſult of common movements, are, at all times and places, performed in the ſame manner, by a ſwarm of little creatures, not aſſembled from choice, but united by the force of nature. It is not ſociety but numbers that operate in this caſe; it is a blind power which cannot be compared to that light by which all ſociety is directed; I ſpeak not of that pure light, that ray of divinity which has been communicated to man alone, and of which the beaver is certainly as deſtitute as any other animal. As their ſociety is formed rather by a kind of choice than neceſſity, and as, while it ſuppoſes at leaſt a general

neral concurrence and common views, implies alſo a beam of intelligence, which, though widely different from that of man in principle, produces effects ſo ſimilar as to warrant a compariſon, not indeed with ſociety, as it is found among civilized nations, but as it appears among ſavages juſt emerging from abſolute ſolitude; a ſociety which, with propriety, can alone be compared with that of animals.

Let us then examine the produce of theſe ſocieties, let us enquire how far the art of the ſavage extends, and where the talents of the beaver is limited. To break down a branch, to uſe it as a ſtaff, to build a hut and cover it with leaves for ſhelter, to collect moſs or hay, and to make a bed of them, are acts common to the animal and to the ſavage. To rub a ſtone ſo as to render it an edged inſtrument for cutting or ſtripping the bark of trees, for ſharpening arrows, for flaying an animal, in order to make a covering of its ſkin; to make bow-ſtrings of its ſinews, to fix thoſe ſinews to a thorn or bone, and uſe them as needles and thread, theſe are acts which may all be performed by a man in a ſtate of ſolitude, and without aſſiſtance from others, ſince they depend ſolely on his conformation, and only ſuppoſe him to have the uſe of his hands. But,

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to cut down, and tranſport a large tree, to raiſe a mole, or build a village, are, on the contrary, operations which neceſſarily ſuppoſe common labours and concerted views; theſe are the only performances which reſult from immature ſociety in ſavage nations; while the operations of the beavers are the fruits of a perfected ſociety among thoſe animals; for it is to be obſerved, that they never attempt to build but in countries where they are in no danger of having their tranquillity interrupted.

There are beavers in Languedoc, in the iſlands of the Rhone, and many in the northern provinces of Europe; but as all thoſe countries are inhabited, or at leaſt frequented by men, the beavers, as well as all other animals, are there diſperſed, forlorn and timid creatures. There they have never been known to aſſemble, or undertake any common work: whereas in deſart regions, where human ſociety was formed more late, where ſome few veſtiges of ſavages alone could be traced, beavers were every where ſeen united, forming ſocieties, and conſtructing works which were the admiration of every beholder. Of this I ſhall endeavour to quote ſuch teſtimonies are are moſt judicious and leaſt liable to cenſure, and ſhall only conſider as certain thoſe facts which are confirmed

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by common conſent. Leſs inclined to indulge admiration, perhaps, than ſome writers, I ſhall not heſitate to doubt, and even to criticiſe, whatever may ſeem too improbable to demand our belief.

It is generally allowed that the beaver, far from having a ſuperiority over other animals, ſeems to be inferior to many of them, in his merely individual qualities; and this fact I am enabled to confirm, by having had a young beaver, which was ſent me from Canada, in 1758, alive in my poſſeſſion for more than a twelvemonth. This animal is mild, peaceable, and familiar; it is rather inclined to be gloomy and melancholy, has no violent or vehement paſſions, its movements are ſlow, it makes few efforts, unleſs to gain its liberty, which it frequently attempts by gnawing the gate of its priſon, but without violence or precipitation. In other reſpects it ſeems to be perfectly indifferent, forming no attachments *, and is as little inclined to offend as pleaſe. He is inferior to the dog in the relative qualities which might make him approach to man; he appears formed neither to ſerve, command, or even to aſſociate

* M. Klein, however, ſays that he kept a beaver for ſeveral years, which followed and would go in queſt of him, as dogs ſearch for their maſters.

aſſociate with any ſpecies but his own. His talents are repreſſed by ſolitude, and it is by ſociety with his own kind they are brought into action. When alone he has little induſtry, few tricks, and not ſufficient diſtruſt to avoid the moſt obvious ſnares. Far from attacking any other animal, he has ſcarcely art to defend himſelf, always preferring flight to combat, he only reſiſts when driven to an extremity, and then bites very hard with his teeth.

If we conſider this animal, then, in a ſtate of nature, or rather in his diſperſed and ſolitary ſtate, we ſhall find, that his internal qualities are not ſuperior to other animals; he has not the genius of a dog, the ſenſe of an elephant, nor the cunning of a fox; and he is rather remarkable for external ſingularities than for any apparent ſuperiority of internal qualities. The beaver is the only animal who has a flat, oval tail, covered with ſcales, which ſerves as a rudder to direct his courſe in the water; the only one that has his hind-feet webbed, and the toes of his fore-feet ſeparate, which he uſes to convey food to his mouth; the only one which reſembles a land animal in the fore-parts, and approaches the nature of an aquatic one in the poſterior; in ſhort he forms the ſame ſhade between quadrupeds and fiſhes, as the bat

forms between quadrupeds and birds. But theſe ſingularities would be rather defects than perfections, if the beaver did not derive from this conformation peculiar advantages, which render him ſuperior to all other animals.

The beavers begin to aſſemble in June or July in order to form themſelves into a ſociety. They arrive in numbers from all ſides, and ſoon form a company of two or three hundred; the place of meeting is generally that where they intend to fix their abode, and is always by the ſide of ſome lake or river. If it be a lake, wherein the waters always remain upon a level, they diſpenſe with making a dam, but if it is a running ſtream, ſubject to floods and falls, they build a bank or pier quite acroſs ſo as to ſecure a piece of water always at the ſame height, and this bank is frequently from 80 to 100 feet long, and ten or twelve thick at the baſe. If we compare the greatneſs of the work with the ſize * of the architect, it will appear enormous, but the ſolidity with which it is conſtructed is ſtill more aſtoniſhing. They commonly chooſe that part of the river which is moſt ſhallow, and if poſſible, where ſome large

* The largeſt beavers weigh from 50 to 60 pounds, and are ſeldom more than three feet in length, meaſuring from the tip of the noſe to the inſertion of the tail.

large tree is growing by the ſide of the ſtream; this they inſtantly ſet about cutting down, and although it is ſometimes much thicker than a man's body, they very ſoon accompliſh, without any other inſtrument than their four inciſive teeth; and they always ſo contrive as to make it fall acroſs the ſtream; they next cut off the top branches to make it lie level. Theſe operations are performed in common. Several are employed at the foot of the tree in gnawing it down, then others ſever the branches, while others are, at the ſame time, engaged in parties along the banks of the river in cutting ſmaller trees, from the ſize of a man's leg to that of his thigh; theſe being cut to a certain length, they drag, by land, to the brink of the river, and then by water to the place allotted for their building; having pointed them at one end, they ſink them down at ſmall diſtances from each other, and then interweave them with pliant branches; the placing theſe piles is the moſt difficult part of their operations, but which they accompliſh by one party ſupporting the thick end with their teeth, while others plunge to the bottom and dig holes with their feet to receive the points that they may ſtand upright. While ſome are thus employed, others bring earth and clay, which they prepare for their

purpoſe with their feet and tails; and they tranſport it in ſuch large quantities, that they block up all the intervals between the piles; and which piles are formed by a number of ſtakes in ſeveral rows, exactly of an height, are placed oppoſite to each other, and extend acroſs the river: that this embankment may ſuſtain the weight of the water, it is made ſloping, ſo that although it is twelve feet at the baſe, it is not more than three at the top; from which ingenious contrivance it has not only the requiſite thickneſs and ſolidity, but alſo a form of all others the moſt proper for confining the water, maintaining its weight, and baffling its attacks. Near the top of this bank they make two or three openings for the ſuperfluous water to eſcape, and which they occaſionally enlarge or contract as the river riſes or falls; and when by any ſudden inundations their work is damaged, on the retreat of the waters they repair them with the utmoſt diligence.

After this diſplay of their public labours, it would be ſuperfluous to add a deſcription of their private conſtructions, were it not neceſſary that, in hiſtory, an account ſhould be given of every fact, and were not this firſt great work of the beaver, made with an uniform intention to render their ſmaller habitations more

commodious.

commodious. Theſe habitations are partly built upon piles on the banks of the river, and have two openings, one for the purpoſe of land, and the other for water excurſions; they are either round or oval, and are of various ſizes, from four to eight or ten feet in diameter; ſome of them conſiſt of three or four ſtories, and their walls are about two feet thick, raiſed upon planks, which both ſerve for foundations and floors. When they conſiſt of but one ſtory, the walls are only a few feet perpendicular, and then raiſed in a curve, which terminates in a dome or vault, and ſerves as a covering. They are conſtructed with ſuch ſolidity as to be impenetrable to the heavieſt rains, to defy the moſt impetuous winds, and are plaiſtered with exceſſive neatneſs, both within and without, as much ſo as if they were actually done by the hand of man; they nevertheleſs uſe no inſtruments for the preparation of this mortar than their feet, or for its application than their tails. They chiefly uſe wood, ſtone, ſandy earth, and ſuch materials as are not eaſily diſſolved with water; for the wooden work they take ſuch trees as grow on the banks of rivers, which are more eaſily cut down, ſtripped of their bark, and carried, than ſolid timber, all which they are ſure to accompliſh upon

upon a tree which they have once attacked. They begin to cut a tree at the diſtance of a foot, or a foot and a half from the ground, and they ſit as they work, for beſides the advantage of this convenient poſture, they have the pleaſure of continually gnawing freſh bark and ſoft wood, both of which they prefer to moſt other kinds of aliment; of theſe they provide an ample ſtore for their ſubſiſtence during winter*, being averſe to dry wood. It is in the water, and near their habitations, that they eſtabliſh their magazines; to each cabin there is one allotted, proportioned to the number of its inhabitants, to which they have all a common right, and never plunder their neighbours. Some hamlets, if we may ſo call them, are compoſed of 20 or 25 cabins, but ſuch large ſettlements are rare; in common they do not conſiſt of more than ten or a dozen families, each of which has its own diſtrict, magazine, and habitation; nor will they allow ſtrangers to come into their neighbourhood. The ſmalleſt dwellings contain two, four, or ſix; and the largeſt eighteen, twenty, and it is even aſſerted thirty beavers; and it very ſeldom happens, that the males and females are not of an equal

* The ſpace allotted for the proviſion of eight or ten beavers is from 25 to 30 feet in length, and eight or ten feet broad and deep.

equal number. Moderately ſpeaking, therefore, their ſociety may be ſaid to conſiſt frequently of 150 or 200, who having at firſt exerted their united induſtry in raiſing a great public work, afterwards form themſelves into different bodies to conſtruct private habitations.

However numerous the ſociety may be, peace and good order are uniformly maintained; their union is ſtrengthened by a common ſeries of toil, and confirmed by the conveniencies they have jointly procured; and the abundance of proviſions which they amaſs and conſume together, render them happy within themſelves. Having moderate appetites, and an averſion to fleſh and blood, they have not the ſmalleſt propenſity to hoſtilities or rapine, but actually enjoy all thoſe bleſſings which man knows only how to deſire. Friends to each other, if they have threatened enemies abroad they know how to avoid them; and on the firſt alarm they give notice of their mutual danger by ſtriking the water with their tail, the ſound of which is heard in their moſt diſtant dwellings; on this each provides for himſelf as he thinks moſt expedient; ſome plunge into the water, others conceal themſelves within the walls of their own habitations, which is in no danger but

but from the fire of heaven, or weapons of man, and which no animal dares attempt to open or overturn. Theſe aſylums are not only ſecure but neat and commodious. The floors are covered with verdure; young branches of the box and fir ſerving them for carpets, and upon which they do not ſuffer the ſmalleſt dirt. The window that fronts the water they uſe as a balcony to enjoy the freſh air, and to bathe, which they do the greateſt part of the day, ſitting in an upright poſture in the water, with their heads and foreparts only being viſible. This element appears ſo neceſſary, or at leaſt ſo pleaſing, that they ſeem unable to do without frequent immerſions in it; therefore, in making this window, they are very careful to guard againſt its being blocked up by the ice; when the river is frozen over, they make an opening in it, and ſwim a conſiderable way under the ice; at which times they are eaſily taken, by attacking the dwelling on one hand, and at the ſame time, lying in wait for them at a hole purpoſely made in the ice at ſome diſtance, and to which they are obliged to come for breath. The habit of continually keeping their tails and hinder parts in the water, ſeems to have changed the nature of their fleſh: that of the fore-parts, as far as the reins, has the taſte

and

and conſiſtency of the fleſh of land-animals, while the tail and poſteriors has the ſmell, ſavour, and other qualities of fiſh. As for the tail it is even an extremity, an actual portion of a fiſh fixed to the body of a quadruped; it is a foot long, an inch thick, and five or ſix inches broad; it is entirely covered with ſcales, and has a ſkin altogether the ſame as that of a large fiſh. Theſe ſcales may be ſcraped off with a knife, and then the impreſſions are to be ſeen on the ſkin as in all ſcaly fiſhes.

It is in the beginning of ſummer that the beavers aſſemble; they employ July and Auguſt in the conſtruction of their banks and habitations; in September they collect their proviſions of bark and wood, and afterwards, enjoying the fruits of their labour, they experience the ſweets of domeſtic tranquillity; this is the time of repoſe, and what is more the ſeaſon of love. Acquainted with, and prepoſſeſſed in favour of each other, from habit, from the pleaſures and fatigues of a common labour, no couple is formed by random, nor by phyſical neceſſity, but by inclination and choice. Happy in each other they paſs the months of autumn and winter together, and ſcarcely ever ſeparate. With every thing around them they wiſh at home, they never go out but upon agreeable

and uſeful excurſions; on which occaſions they bring home freſh bark, which they prefer to what is too dry, or been too much ſoaked in water. The females are ſaid to go four months with young; they bring forth towards the cloſe of winter, and have two or three at a time. Nearly at this period the males leave them, who retire into the country to enjoy all the ſweets of the ſpring; they pay occaſional viſits to their habitations, but reſide there no more. The females, however, remain in them employed in ſuckling, tending, and rearing their young, who are in a condition to follow them at the expiration of a few weeks; at which time they, in their turn, make ſome excurſions, feeding on crabs, fiſhes, and bark of young trees; and paſs the whole of the ſummer upon the water or in the woods. They are not thoroughly collected again till autumn, unleſs their bank, or dwellings, ſhould happen to be damaged by an inundation, in which caſe they aſſemble betimes to make the neceſſary repairs. They are more fond of reſiding in ſome places than others, and have been obſerved to return every ſummer, after their works have been repeatedly demoliſhed, to repair them, till harraſſed by this perſecution, and weakened by the loſs of ſeveral of their troop,

troop, they have, with one conſent, deſerted it, and retired to ſome more ſecure and leſs frequented neighbourhood.

Winter is the ſeaſon principally allotted for hunting them, as it is then only their fur is in perfection; and when, after their dwellings are demoliſhed, a number of them are taken, their ſociety is never reſtored; but thoſe which eſcape captivity or death, become houſeleſs wanderers. Their genius is overcome by apprehenſion, and they never more attempt to exert it, but conceal themſelves in holes under ground, and reduced to the condition of other animals, they lead a timid life, employing themſelves only to ſatisfy their immediate and urgent wants, they no longer retain thoſe qualities which they ſo eminently poſſeſs in their ſocial ſtate. However marvellous the deſcription we have juſt given of the ſociety of the beaver may appear, it is beyond a doubt ſtrictly conſonant to truth. A number of occular witneſſes have agreed in their writings to every fact I have mentioned; and if the preſent recital differs from ſome authors whom I have followed, it is only in ſuch points as appeared to me to be too marvellous and improbable to be believed. Many writers, not content with aſcribing to the beaver ſocial manners, and evident talents for

architecture, have attributed to them general ideas of policy and government. They have aſſerted that when their ſociety is formed, they reduce travellers and ſtrangers of their own ſpecies into ſlavery; that they employ them in carrying their clay and wood; that they treat in the ſame manner the idle who will not, and the old who cannot, work; that is, they throw them upon their backs, and uſe them as ſo many vehicles to carry their materials; that they never aſſemble in an even number, for the purpoſe of having, in all their deliberations, a caſting voice; that each tribe has its peculiar chief; that they have centinels eſtabliſhed for the public ſecurity; that when chaſed they tear off their teſticles to ſatisfy the avarice of their purſuers; that when thus mutilated they turn about and preſent themſelves to obtain mercy*, &c. Although we diſcredit theſe exaggerations, yet we muſt not reject thoſe facts which have been eſtabliſhed by moral certainties. A thouſand times have the works of the beaver been viewed, overturned, meaſured, deſigned, and engraved; and every doubt is baniſhed, by ſome of their fabrics ſtill ſubſiſting; for though leſs common than when North America was firſt

* This is affirmed by Ælian, and all the other ancient writers, Pliny excepted, who abſolutely denies it.

firſt diſcovered, the lateſt miſſionaries and travellers, who have viſited the northern parts of that continent, unanimouſly concur in having met with them.

By theſe we are told that, beſide the beavers, who live in ſocieties, there are others which lead a life of ſolitude; who have been rejected from the body, by having been guilty of ſome crime againſt it, and therefore are not allowed to partake of its advantages; they have neither houſe nor magazine, and are forced to live, like the badger, in holes under ground. They are eaſily diſtinguiſhed from their coats being always dirty, and their hair rubbed off by the friction of the earth. Like the otters they inhabit the edge of rivers, where ſome of them dig a ditch ſeveral feet deep, in order to make a pond that may reach to the mouth of their hole, which has an internal aſcent; there are, however, others which live at a conſiderable diſtance from the water. All the European beavers are ſolitary, and their fur is not near ſo fine as that of thoſe who live in ſociety. They differ in colour according to the climate they inhabit. In the northern countries they are black, and thoſe are the fineſt, although among thoſe there are ſome found entirely white, ſome grey, and others with red ſpots.

The

The farther they are removed from the north the more bright and varied we find their colour. In the north part of Canada they are chefnut, and among the Illionois they are yellow, or olive-coloured. There are beavers in America from the 30th degree of north latitude to beyond the 60th. They are common in the north part, and gradually decreafe towards the fouth. This is alfo the cafe in the Old Continent; we never find them numerous but in the northern countries; and in France, Spain, Italy, Greece, and Egypt, they are very rare. They were known to the ancients, and by the religion of the Magi it was forbidden to kill them. Upon the borders of the Euxine fea they were common, and were called *canes pontici*; but it is probable they did not enjoy much tranquillity in the neighbourhood of this fea, (which from the earlieft time has been frequented by mankind) fince none of the ancients fpeak either of their fociety or labours. Ælian, in particular, who had fuch a propenfity to the marvellous, and who I believe was the firft who mentioned their difmembering themfelves to delay the hunters, would never omitted enlarging on the wonders of their republic, and genius for architecture. Would Pliny, whofe bold, gloomy, and fublime genius

was

was always bent upon degrading man to exalt Nature; would he have forborne to have compared the labours of Romulus with thoſe of the beavers? It ſeems, therefore, that their induſtry, and talents for building was unknown to the ancients; and although in latter ages, beavers have been found in Norway, and other northern parts of Europe, with habitations of their own conſtruction; and though there is no reaſon to doubt the ancient beavers did not build as well as the modern, yet as the Romans did not penetrate ſo far north, it is not ſurpriſing they ſhould have been unnoticed by their writers.

Several authors have ſaid, that the beaver, being an aquatic animal, could not live ſolely on land; but this opinion is erroneous, for the young beaver ſent me from Canada was reared in the houſe, and when taken to the water was afraid of it, and refuſed to go in; when plunged into the baſon, there was a neceſſity to hold him there by force; but in a few minutes he became perfectly reconciled; afterwards, when left to his liberty, he would frequently return to it of himſelf, and even roll upon the dirt and wet pavement. One day he eſcaped and deſcended by a ſtair-caſe into the ſubterraneous vaults in the Royal Garden, and ſwam a conſiderable time in the

the ſtagnant water at the bottom of them, yet no ſooner did he ſee the light of the torches, which were brought to ſearch for him, than he returned, and ſuffered himſelf to be taken without the ſmalleſt reſiſtance. He is familiar without fawning, and is ſure to aſk for ſomething to eat from thoſe he ſees at table, which he does by a ſmall plaintive cry, and ſome geſtures with his fore-paws. When he obtains a morſel he carries it off and conceals it, that he may eat it at his eaſe. He ſleeps pretty often, and then lies upon his belly. No food comes amiſs to him, meat excepted, which he conſtantly refuſes either raw or dreſſed. He gnaws every thing he comes near, and it was found neceſſary to line with tin the barrel in which he was brought over.

Though the beavers prefer the borders of lakes, rivers, and other freſh waters, yet they are ſometimes found on the ſea-ſhores, eſpecially mediterranean gulphs, which receive great rivers, and where the waters are leſs ſalt. They are profeſſed enemies to the otters, whom they hunt, and will not even permit to appear in the waters which they frequent. The fur of the beaver is more beautiful and thick than that of the otter; it is compoſed of two ſorts of hair, the one ſhort, buſhy, ſoft as down, and impe-

netrable

netrable to the water, immediately covers the ſkin; the other longer, briſtly, and ſhining, but thinner, ſerves as an upper coat, and defends the former from filth and duſt. The latter is of little value, it is the firſt alone which is uſed by our manufacturers. The blackeſt furs are generally thickeſt, and conſequently moſt eſteemed; nor is the fur of the ſolitary beavers equal to that of thoſe who live in ſociety. Theſe animals, like all other quadrupeds, ſhed their hair in ſummer, and therefore the furs of ſuch as are taken in that ſeaſon are of little value. The fur of the white beaver is eſteemed becauſe of its rarity; and the perfectly black are nearly as uncommon as the white. But, independent of the fur, which is the moſt valuable article, the beaver furniſhes a ſubſtance which has been conſiderably uſed in medicine; it is known by the name of *caſtoreum*, and is contained in two large bladders, and which the ancients miſtook for the teſticles of the animal; but as they are to be found in every pharmacopæia, it is unneceſſary to give here a deſcription of them or their uſes *. The ſavages are ſaid to obtain an oil from the beaver's tail, which

* It is pretended, that the beavers extract this liquid by preſſing the bladders with their feet, and that it gives them

they apply as a topical remedy for different complaints. The fleſh of this animal, though fat and delicate, is yet bitter and diſagreeable to the palate. It is affirmed that its bones are of an exceſſive hardneſs, a circumſtance of which we are unable to determine, having never diſſected but one, which was very young. Their teeth are very hard, and ſo ſharp, that the ſavages uſe them to cut, hollow, and poliſh their wood; who alſo clothe themſelves with its ſkin, and in the winter they wear it with hair next bodies.

The beaver uſes its fore-feet like hands, with as much facility as the ſquirrel; the toes of the hind-feet being connected by a ſtrong membrane, ſupply the place of fins, and expand like thoſe of a gooſe, which the beaver ſomewhat reſembles in its walk. He ſwims much better than he runs; and as his fore-legs are much ſhorter than his hind ones, he always moves along with his head very low and his back arched. His ſenſes are very acute, and that of ſmelling ſo delicate, that he will not permit any dirt or filth to remain near him. When kept in confinement too long, and he is under the neceſſity

an appetite when diſguſted with food, and that the ſavages to entrap them, wet the ſnares with it. But it is more certain, that the animal uſes it to greaſe its hair

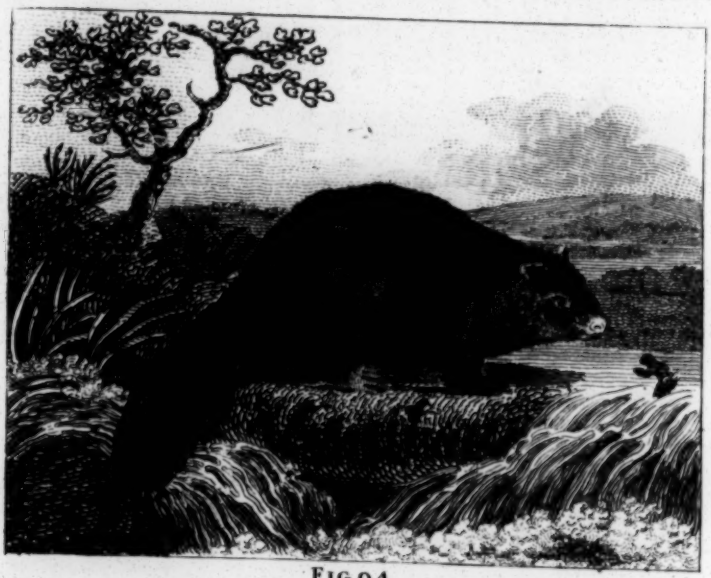

FIG. 94.

Beaver.

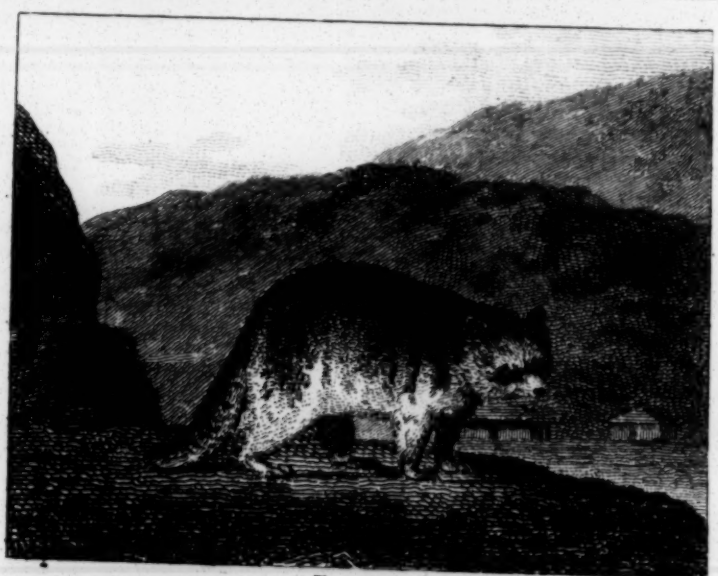

FIG. 95.

Raccoon

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neceſſity of voiding his excrements, he drops them cloſe to the threſhold of the door, and as ſoon as that is opened, puſhes them out. This habit of cleanlineſs is natural to them, and our young beaver never failed to purify his apartment in this manner. At the age of one year he gave a ſign of ardour for a female, which ſeems to be a proof he had then nearly attained his full growth; therefore their duration of life cannot be very long, and it is probably wrong to extend it to fifteen or twenty years. The beaver I had was very ſmall for his age; a circumſtance that is not ſurpriſing, ſince he had been in perpetual confinement from his earlieſt days, and from being unacquainted with water until he was nine months old, he could not, therefore, be expected to grow and expand like thoſe who, while they enjoy their liberty, range at pleaſure in that element which ſeems to be almoſt as neceſſary to them as that of land.

SUPPLEMENT.

IN confirmation of our former remarks that beavers might be eaſily tamed, M. Kalm, in his Voyages, ſays, that he had ſeen beavers ſo

tame that they would go out to fiſh and bring the prey home to their maſters; nay that they would even follow men and dogs, go with them into their boats, jump into the water, and ſoon come up again with fiſh. And M. Gmelin affirms that he ſaw a beaver in Siberia, which had been reared in the houſe, who would go to conſiderable diſtances, ſometimes returning with a female whom he would ſuffer to go away by herſelf after the ſeaſon of love.

THE RACCOON.

SEVERAL authors have deſcribed this animal under the name of *coati*, yet I have choſen to adopt the name given to it in England, that it may not be miſtaken for, and confounded with, the real coati, or the coati-mondi, which appears to be nothing more than a variety of that ſpecies.

I had a Raccoon *(fig. 95.)* alive, and which I kept more than twelve months; he was about the ſize of a ſmall badger, his body ſhort and

and bulky, his hair long, thick, black at the points, and grey underneath; his head was like that of a fox, but his ears round and ſhorter; his eyes were large, and of a yellowiſh green, and over them a black band went acroſs; his ſnout was ſharp, and his noſe rather inclined upwards; his under lip was leſs prominent than his upper one; he had, like the dog, ſix inciſive and two canine teeth in each jaw; his tail was buſhy but tapering towards the point, marked with alternate black and white rings from one end to the other, and was at leaſt as long as the body; his fore legs were much ſhorter than his hind ones, and each had five toes armed with ſtrong ſharp claws. He uſed his fore feet to hold his food while eating, but his toes not being flexible he could not graſp any thing with one paw, but was obliged to uſe them both when food was preſented him.

Though the raccoon is ſhort and bulky he is very active; his pointed claws enable him to climb trees with great facility; he runs up the trunk with eaſe, and frolics to the extremities of the branches in perfect ſecurity. On the ground he rather bounds than runs, and his motions, though oblique, are always quick and light. He is a native of the ſouthern parts of America, nor has ever been found upon

upon the old continent, at leaſt if we may judge from the entire ſilence of travellers about him. In the regions of America, he is, however, very common, particularly in Jamaica, where he reſides in the mountains, from whence he often deſcends to feed upon the ſugar-cane. He is not met with in Canada, nor in the northern parts of the continent; and yet he is not afraid of cold. M. Klein reared one at Dantzick; and the one I had paſſed a whole night with his feet in the ice, without being incommoded.

Every thing he has given him to eat he dips in water, eſpecially bread, which he will not take out again, unleſs preſſed with hunger, before it is perfectly ſoaked; but when very hungry he will eat dry food, and any thing preſented to him. He ſearches about in every corner, and eats every thing he meets with, whether fleſh, dreſſed or raw, fiſh, eggs, live fowls, corn, roots, &c. He likewiſe devours inſects, is fond of hunting ſpiders, and when at liberty in a garden, ſnails, worms, and beetles, are his favorite prey. He is exceedingly fond of ſugar, milk, and other kind of ſweet aliments, fruit excepted, to which, however, he prefers either fleſh or fiſh. He retires to void his excrements; is a familiar and even fawning animal;

mal; mine uſed to jump on thoſe he loved, and to friſk and play about them chearfully; he was cleanly, for ever in motion, and ſeemed to poſſeſs much of the nature of the maki, and ſome of the qualities of the dog.

SUPPLEMENT.

A letter I received from M. Blanquart des Salines, dated October 29, 1775, contained many particulars concerning the Raccoon. This gentleman ſays that the one in his poſſeſſion had conſtantly been kept chained, in which ſtate he appeared gentle, yet ſhewed no inclination to be fond, but whenever he procured his liberty his docility diſappeared, and on one occaſion they had great difficulty to ſecure him again. M. Salines, however, often permitted him to go about with his chain looſe, for which he would appear very grateful, but that was not the caſe whenever he procured his own liberty, as he would then roam about for three or four days together, and do a great deal of miſchef, by getting into the hen-houſes

of

of a night, killing all the poultry, and eating only their heads. When chained he would uſe much art, permitting the fowls to partake of his food, until ſuppoſed ſecurity had put them off their guard, and they came within his reach, when he would ſeize and tear them to pieces. He opened oyſters with great dexterity, putting them under his hind feet, and then entering the weakeſt part with his fore claws ſeparated the ſhells in an inſtant: he performed this, as well as all other of his operations, by feeling alone, ſeldom making uſe either of his eye or his noſe. He does not appear to have much gratitude for favors, but very reſentful for ill-treatment, for a ſervant having given him a few ſtrokes with a whip, he would never afterwards ſuffer him to come near without expreſſing the utmoſt rage; flying at the man, making the moſt violent cries, and refuſing every thing offered until he diſappeared. When attacked by any thing ſtronger than himſelf he makes no reſiſtance, but rolls himſelf up ſomething in the manner of a hedge-hog, and in which ſtate he will even ſuffer himſelf to be killed without uttering the ſmalleſt complaint. He never lies upon any bed, but invariably turns out the ſtraw, or any thing put into his houſe to anſwer that purpoſe. He does not

appear

appear to be affected with cold, nor ſolicitous for warmth, for he has been covered with ſnow without injury, and one froſt, on being preſented with warm water and ſome almoſt frozen, for him to ſoak his food, he always uſed the latter; and notwithſtanding he might have gone into the ſtable to ſleep he generally preferred a corner in the yard. He never wets freſh or bloody meat, but every thing that is dry he puts into water. He has an utter diſlike to children, their crying puts him into a paſſion, and he would fly upon them if poſſible; this ſeems to ſpring from an abhorrence of ſharp ſounds, for he often chaſtiſed a ſmall bitch, of which he is very fond, if ſhe barked too loud.

THE COATI.

THIS animal has been called by many authors the Coati-mondi; I have had it alive; and, by comparing it with the coati mentioned by Thevet, and deſcribed by Marcgrave, I had not the leaſt reaſon to doubt their being

varieties of the ſame ſpecies; indeed Marcgrave, after having given a deſcription of the coati, ſays there are others of the kind of a blackiſh brown, and which, for the ſake of diſtinction are called *coati-mondi* at Braſil. As the colour of the hair then is the only difference between them, they certainly ought merely to be conſidered as varieties of the ſame ſpecies.

The Coati *(fig. 96.)* is very different from the animal deſcribed in the preceding article. He is of a ſmaller ſize than the raccoon; his body and neck, head and noſe, are of a longer form; the upper jaw is terminated by a ſnout, which extends an inch, or an inch and a half, beyond the lower one; and this ſnout, which is moveable in every diviſion, turns up at the point. The eyes of the coati are alſo ſmaller than thoſe of the raccoon; his ears are ſhorter; his hair longer and more coarſe; his legs ſhorter; his feet longer; but, like the raccoon, his tail is diverſified with rings *, and to all its feet there are five toes.

Some authors have ſuppoſed the ſow-badger, and the taxus-ſuillus, of which Aldrovandus has

* There are ſome coatis which have the tail of one uniform colour, but as they differ in no other particular, they can only be conſidered as varieties of the ſame ſpecies.

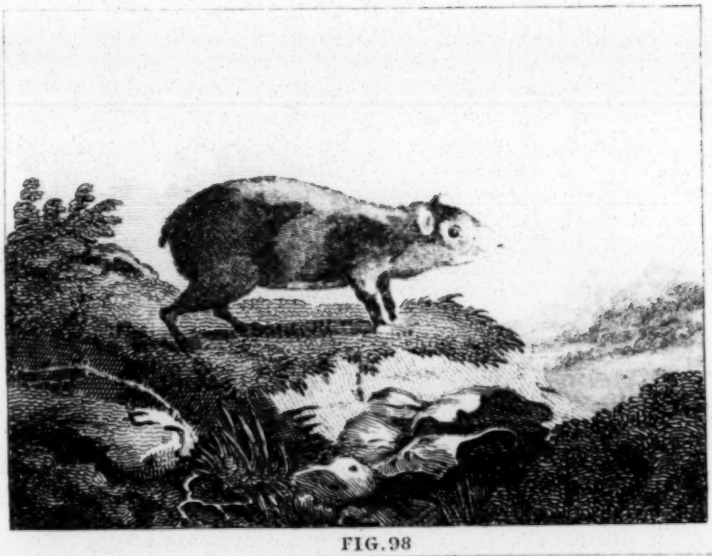
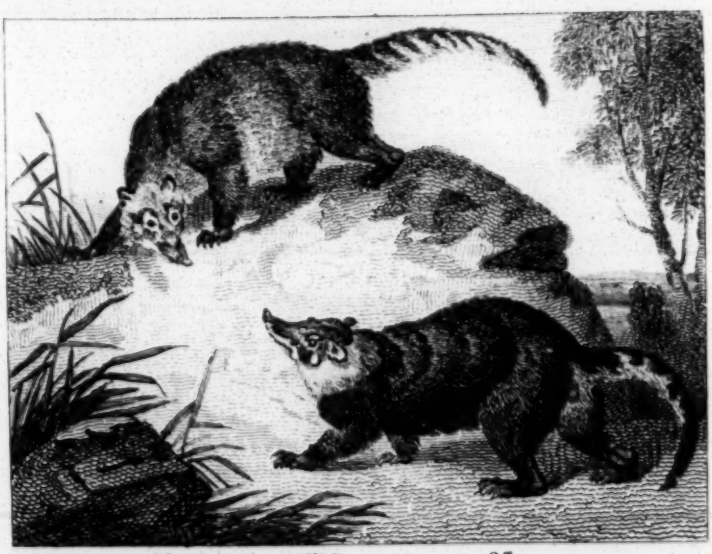


FIG. 98

Agouti



96 FIG. 97

Brown Coati *Black D°*

has given a figure, to be the ſame as the coati; but if we conſider that the ſow-badger, of which hunters ſpeak, is ſuppoſed to be found in France, and even in ſome colder climates of Europe, and that, on the contrary, the coati is only known in the ſouthern parts of America, this idea muſt be rejected, as having no foundation to ſupport it; as the figure given by Aldrovandus is nothing more than a badger, to which the ſnout of an hog has been added. That author does not ſay this taxus-ſuillus was drawn from Nature, nor does he give any deſcription of the animal itſelf; and indeed the ſnout alone of the coati is ſufficient to diſtinguiſh it from any other quadruped.

The coati has a practice of gnawing his own tail, which, when not mutilated, is longer than his body, and which he generally rears aloft, and moves with eaſe in any direction. This ſeemingly unnatural taſte of gnawing their tails is not peculiar to the coati, for ſome monkies, and other animals with long tails, frequently ſhorten them a fourth, or even one-third, in this very manner. From this circumſtance a general inference has been drawn, namely, that in very long members, the extremities of which muſt conſequently be very remote from the centre of ſenſation, the feeling

muſt be weak, and the more ſo the greater the diſtance and the ſmaller the part, for if the extremities of the tails of theſe animals were very ſenſible the pain excited would prevail over inclination to mutilate, and they would preſerve their tails with as much care as any other part of the body.

The coati is an animal of prey, which ſubſiſts on fleſh and blood, and which, like the fox or martin, deſtroys ſmall animals and poultry, hunts for the neſts of birds, and devours their eggs; and it is, probably, from this conformity of diſpoſition, rather than from any reſemblance to the martin, that the coati has been conſidered as a ſmall ſpecies of the fox.

THE AGOUTI.

THE Agouti *(fig. 98.)* is about the ſize of a hare, and has been conſidered by many writers as a kind of rabbit, or large rat; yet in very trifling marks does it bear a reſemblance to either, and in its natural habits it eſſentially differs

differs from them both. It has the hair, grunting, and voracious appetite of the hog; and when fully ſatiated it hides the remainder of its food, like the fox, in different places. It delights in gnawing and ſpoiling every thing it comes near. When irritated it bites fiercely; its hair ſtands erect along the back, and it ſtrikes the ground violently with its hind feet. It does not dig holes, like the rabbit, but lives in the hollows of trees. It feeds chiefly on roots, potatoes, yams, and fruits; thoſe that reſide in the woods alſo eat leaves, plants, and ſhrubs. It uſes its fore paws, like the ſquirrel, in carrying food to its mouth; it runs very ſwiftly up hill, or on even ground, but its fore paws being much ſhorter than its hind ones, upon a deſcent it is in great danger of falling; it has a good ſight and excellent hearing, and whenever it hears a whiſtle it ſtops to liſten. They ſcald the agouti and dreſs it like a ſucking pig, and the fleſh of ſuch as are fat and well fed is tolerable food, though it has always a peculiar taſte, and is rather tough. When they go among the ſugar-canes they are eaſily taken, for ſinking every ſtep in the ſtraw and leaves, which covers the ground, a man may come up with, and even kill them with a ſtick. When

in

in the open country it runs with great ſwiftneſs before the dogs; and having gained his retreat, nothing can force him to come out but ſmoke; for which purpoſe the hunters burn faggots and ſtraw before the mouth of the hole, upon which the animal makes plaintive cries like that of a pig, but ſeldom quits the place of concealment until the laſt extremity. When taken young they are tamed, and will go out and return alone. When in a wild ſtate, they generally dwell in the woods, where the female chooſes the moſt obſcure parts, and there prepares a bed of leaves and graſs for her young. They uſually bring forth two or three at a time, and in a day or two afterwards, ſhe carries them in her mouth like a cat, into the hollow of ſome tree, where ſhe ſuckles them for a ſhort ſpace, for they are ſoon in a condition to run about and provide for themſelves; from which it appears that the time required for their growth is but ſhort, and of courſe the duration of their lives cannot be long.

The Agouti appears to be a native of the ſouth parts of America, not being known in the old continent. They are common in Braſil, Guiana, St. Domingo, and all the iſlands around.

around. To ſubſiſt and multiply, they require a warm climate, yet they will live in France if well ſheltered from wet and cold, eſpecially in winter; it is even a ſtranger in the cold and temperate climates of America. In the iſlands there is only this one ſpecies of agouti, which we have deſcribed, but in the other places above named, it is affirmed there is another ſpecies called the *agouchi*, which is much ſmaller than the firſt, but we have the teſtimony of ſeveral perſons who reſided a long time at Cayenne, who were equally acquainted with the agouti and agouchi, that the one we have deſcribed is certainly the agouti. The latter we have never been able to procure, but the former we had alive; it was as large as a rabbit, its hair was coarſe, and of a brown colour, with a ſmall mixture of red; its upper lip was like that of the hare, its tail was ſhorter than that of a rabbit, its ears very ſhort and broad, and its upper jaw was more prominent than the under; its ſnout was like that of the loir, and its teeth reſembled the marmot's; its neck was long, its legs were ſlender, and on its fore-feet it had four toes, and three on its hind ones. Marcgrave, and almoſt all naturaliſts after him, have ſaid that the agouti has ſix toes on the hind

hind feet. M. Briſſon is the only writer who has not copied this error of Marcgrave, he deſcribed it from nature, and, like us, perceived only three toes on the hind-feet.

SUPPLEMENT.

M. de la BORDE ſays, that the agouti is a very common animal in Guiana, that its fleſh is as white as that of the rabbit, and is of a ſimilar flavour; that they are hunted by dogs, taken in traps, and that the Negroes take them in great numbers by whiſtling, or imitating their cries; that they principally feed upon nuts, which they collect and conceal in great quantities; that they are very prolific, producing as many, and as often as the rabbit; that they are eaſily tamed, but always retain ſomewhat of their ſavage diſpoſition, yet if they go from home will return again of themſelves; and that they keep in their holes during the night, unleſs the moon ſhines very clear, and are running about the greateſt part of the day.

THE LION.

THE influence of climate is marked with but ſlight variations in the human ſpecies; becauſe that is entire in itſelf, and totally diſtinct from every other. Man, white in Europe, black in Africa, yellow in Aſia, and copper-coloured in America, is ſtill the ſame being, tinctured with the colour peculiar to the climate. And as he is formed to govern the earth, and as he has the whole globe for his habitation, it ſeems as if no ſituation was foreign to his nature; under the ſcorching ſouth, or in the frozen regions of the north, he lives, he multiplies, and has been ſo anciently diffuſed over every country, that he does not appear to have a particular propenſity to any. It is far otherwiſe with other animals; in them the influence of climate is marked with ſtrong characteriſtics, becauſe their ſpecies is diverſified, and their nature is leſs perfect and more confined than that of man. Not only are the varieties in each ſpecies more

numerous, but even the differences in the ſpecies themſelves ſeem to depend on the differences of climate. Some animals can only breed in hot countries, others cannot ſubſiſt but in cold ones. The lion never inhabited the northern regions, nor was the rein-deer ever found in the ſouth; and perhaps no ſpecies has been univerſally diffuſed over the face of the earth, beſides that of man. Each has its country, its native ſoil, to which it is confined by a phyſical neceſſity; each is the immediate offspring of the region which it inhabits; and it is in this ſenſe alone we ſay, this animal is a native of one climate, and that a native of another. In hot countries the terreſtrial animals are larger and ſtronger than in the frozen or temperate ones. They are alſo more bold and ferocious; all their natural qualities ſeeming to partake of the ardour of the climate. Lions born under the ſcorching ſun of Africa, are of all others the moſt fierce and formidable. Our wolves and other carnivorous animals, are hardly worthy to be their providers *. The lions of America, if they deſerve to be ſo called, are, like the climate, infinitely more mild; and what proves that the degree of their ferocity depends on the

* There is a ſpecies of lynx which is called the Lion's provider.

the degree of heat is, that in the ſame country, thoſe which inhabit the large mountains, where the air is temperate, are different in diſpoſition from thoſe that dwell in the plains, where the heat is exceſſive. The lions of Mount Atlas, of which the top is ſometimes covered with ſnow, have neither the boldneſs, ſtrength, nor ferocity of the lions of Biledulgerid, or the deſart of Zaara, whoſe plains are covered with burning ſands. In theſe deſarts it is where thoſe terrible lions are found which are the dread of travellers and the ſcourge of neighbouring provinces. Happily for man this ſpecies is not numerous, and ſeems to diminiſh daily; for thoſe who have travelled through this part of Africa affirm they are by no means ſo numerous now as they were formerly; and Mr. Shaw, in his Travels, ſays, the Romans drew fifty times as many lions from Lybia, to combat in their amphitheatres, as are now to be found in the whole country. It is alſo remarked, that in Turkey, Perſia, and India, lions are much more numerous than they were in ancient times. Since this animal preys on every other ſpecies of quadruped, and is himſelf the prey of none, it is obvious that its decreaſe can only be occaſioned by the increaſe of mankind, who are the only beings in nature

capable of making head againſt this king of beaſts; and it muſt be allowed, powerful as he may be, he is no match for even an Hottentot or negro, who often attack him, and very ſeldom without coming off victorious. As the lion has no enemy but man, and his ſpecies being reduced to the fiftieth, or even the tenth part of what it was formerly, it follows that the human ſpecies inſtead of having ſuffered a conſiderable diminution ſince the time of the Romans, as is by ſome pretended, is on the contrary more generally diffuſed, and more numerous even in ſuch countries as Lybia. The induſtry of man encreaſes in proportion with his numbers, but that of other animals remains always the ſame. Every deſtructive ſpecies, like that of the lion, ſeems to be driven to diſtant countries, or reduced to ſmall numbers, not only becauſe man has become every where more numerous, but becauſe he has become more ſkilful and invented dreadful arms of deſtruction, which nothing can reſiſt; arms, which happy would it have been, had they never been employed againſt aught but lions and tigers.

This ſuperiority of numbers, and in the arts of the human ſpecies, which has ſubdued the lion, ſerves alſo to enervate and diſcourage him, for

for he is brave only in proportion to the ſucceſs of his encounters. In the vaſt deſarts of Zaara, in the burning ſands which ſeparate Mauritania and Negro-land, and in all the deſarts of Aſia and Africa, where man has diſdained to fix his habitation, lions are ſtill numerous and preſerve their natural force and courage. Accuſtomed to meaſure their ſtrength with every animal they meet, the habit of conquering renders them intrepid and terrible. Having never experienced the force of his arms, they have no apprehenſion from the power of man, but boldly face and hold him in defiance. Wounds enrage, without repreſſing their ardour? they are not daunted even by the appearance of numbers. A ſingle lion of the deſart often attacks a whole caravan, and if, after an obſtinate engagement, he finds himſelf overpowered, inſtead of flying, he retreats fighting, and faces the enemy to the laſt. On the contrary, thoſe lions which inhabit the peopled countries of Morocco, or India, having become acquainted with man, and experienced the ſuperiority of his arms, have loſt their native courage to ſuch a degree, that they are to be ſcared away with a ſhout, and ſeldom attack any but the unreſiſting flocks and herds, which even women and children are ſufficient to protect againſt them.

This

This alteration in the diſpoſition of the lion, proves that he might be tamed to a certain degree, and admit a ſpecies of education. We read in hiſtory of lions being yoked to triumphal cars, led forth to the field of battle, or let looſe to the chace, and that faithful to their maſter, they never exerted their ſtrength or courage but againſt his enemies. Certain it is that the lion when taken young, and bred up with domeſtic animals, becomes familiar and ſports innocently among them; that he will even be careſſing to his maſter, and that if his natural ferocity returns, he ſeldom exerciſes it againſt his benefactor. As his paſſions are ſtrong, and his appetites vehement, we ought not to preſume that the impreſſions of education will overbalance them; and therefore it would be dangerous to ſuffer him to remain too long without food, or wantonly to perſiſt in irritating or tormenting him. He is not only enraged by bad treatment, but remembers it and meditates revenge; in the ſame manner he alſo remembers benefits and endeavours to ſhew his gratitude for them. In ſupport of this we might recapitulate a number of well authenticated facts, but it is ſufficient that they prove his anger is noble, his courage magnanimous, and his diſpoſition grateful and ſuſceptible of impreſſions.

He

He has often been ſeen to deſpiſe contemptible enemies, and to pardon their inſults when it was in his power to puniſh them. When in confinement he appears gentle, will careſs the hand that feeds him, and will ſometimes ſpare the lives of thoſe animals which are thrown to him for prey; he will even live peaceably with them, ſpare them part of his ſubſiſtence, and has even been known to want food himſelf rather than be the means of depriving them of that life which his generoſity had ſpared. The lion cannot be ſaid to be cruel, ſince he acts from neceſſity and never kills more than he conſumes; while the tiger, the wolf, and all the inferior ſpecies, ſuch as the fox, martin, polecat, ferret, &c. kill without remorſe, and ſeem rather to ſatisfy their malignity than their hunger.

The outward form of the lion ſpeaks the ſuperiority of his internal qualities. His figure is ſtriking and reſpectable; his look confident and bold; his gait ſtately, and his voice tremendous. His bulk is not overgrown like that of the elephant, or the rhinoceros; nor is his ſhape clumſy like the hippopotamus, or the ox. He is in every reſpect compact and well-proportioned; a perfect model of ſtrength joined with agility. He is muſcular, bold, and neither charged with fat nor unneceſſary fleſh. He manifeſts

manifeſts his muſcular power by the eaſe with which he makes prodigious bounds and leaps; by the ſtrong and ſwift movements of his tail, which alone is ſufficient to throw a man to the ground; by the facility with which he moves the ſkin of his face, and particularly that of his forehead, which adds greatly to the expreſſions of fury in his countenance; and, laſtly, by the power he has of moving the hair of his mane, which is not only briſtled up but agitated on all ſides when he is enraged.

To theſe eminent qualities the lion joins all the dignity of his ſpecies. By dignity of ſpecies I mean thoſe whoſe nature is permanent, invariable, and not ſubject to degradation. Thoſe animals, to which this ſingular advantage belongs, the characteriſtics are ſo ſtrongly marked, that they cannot be miſtaken nor confounded with any other ſpecies. In man, the nobleſt being of the creation, the ſpecies is ſole and entire, becauſe all the individuals of it, of whatever race, climate, or complexion, may intermix and produce together; and becauſe it cannot be ſaid that any animal approaches to man in any natural degree The horſe is leſs noble conſidered as a ſpecies than as an individual, ſince the neighbouring one of the aſs is ſo near, that one of each ſpecies will produce

produce animals which Nature reprobates as baſtards, unworthy either race, and renders incapable of perpetuating either ſpecies from whence they ſprung, but which in itſelf exhibiting a mixture of both, proves, beyond a doubt, their cloſe affinity. The ſpecies of the dog is perhaps leſs noble, becauſe he ſeems to be allied to that of the wolf, the wolf, and jackall, who may all be conſidered as degenerate branches of the ſame family. In deſcending by degrees to the inferior ſpecies, ſuch as the rabbit, weaſel, rat, &c. we ſhall find that each of them has ſuch a number of collateral branches that we cannot trace the original ſtock; and, laſtly, in the tribes of inſects, each ſpecies is accompanied with ſuch a number of approximate ones, that we are obliged to conſider them as belonging to a certain genera. This is the only uſe of what is called *method* in Natural Hiſtory, which ought never to be employed unleſs in the difficult enumerations of ſmall objects, as it becomes uſeleſs and ridiculous when treating of beings of the firſt rank. To claſs man with the monkey, or to ſay that a lion is a cat with a long mane and tail, is rather to degrade and disfigure Nature than to deſcribe and denominate her works. The ſpecies of the lion,

therefore is one of the moſt noble, ſince it is moſt entire, and cannot be confounded with thoſe of the tiger, leopard, ounce, &c. and ſince thoſe ſpecies, which appear to be the leaſt remote from the lion, are ſo little diſtinct from each other, as to have been perpetually miſtaken and confounded by travellers and nomenclators.

The largeſt lions are about eight or nine feet in length, from the ſnout to the tail, which is four feet long, and are between four and five feet high. Thoſe of the ſmall ſize are about five feet and a half long, three feet and a half high, and their tail rather more than three feet long. In all her dimenſions the lioneſs is about one fourth leſs than the lion. Ariſtotle divides lions into the greater and ſmaller, and the latter, he ſays, are ſhort in proportion, have their hair more frizzled, and are leſs courageous than the former. He adds, that in general all lions are yellow. The firſt of theſe aſſertions appears doubtful, ſince no traveller has mentioned lions with frizzled hair; ſome authors, indeed, who, in other reſpects do not merit entire confidence, ſpeak of a tiger with curled hair found at the Cape of Good Hope; but almoſt all teſtimonies agree as to the colour of the lion, which is uniformly yellow on

the

BRITISH MUSEUM

Engraved for Barr's Buffon

FIG: 99

Lion.

FIG: 100

Lioness.

ıe back and whitiſh on the ſides and belly. Ælian and Opian have aſſerted, that in Ethiopia the lions are as black as the men; that in India there are ſome white, and others ſpotted and ſtriped with red, black, and blue; but this is not confirmed by any authentic teſtimony, for Mark Paul, the Venetian, does not ſpeak of theſe ſtriped and ſpotted lions as if he had ſeen them, and Geſner obſerves that he only mentions them on the authority of Ælian. It appears, on the contrary, that there are few or no varieties in theſe ſpecies; that the lions of Aſia and Africa perfectly reſemble each other, and that thoſe of the plains differ leſs in colour from thoſe which dwell in the mountains than in ſize.

The lion *(fig. 99.)* is furniſhed with a mane, or rather long hair, which covers all his foreparts, and becomes longer as he advances in age; but the lioneſs, *(fig. 100.)* however old, is without this appendage. The American animal, which the natives of Peru call Puma, and Lion by the Europeans, has no mane, and is ſmaller, weaker, and more cowardly, than the real lion. It is not impoſſible, that the mildneſs of the climate in South America might have ſuch influence on the nature of the lion as to ſtrip him of his mane, reduce his

ſize, and repreſs his courage; but it appears abſolutely impoſſible that this animal, which inhabits the tropical regions only, and to whom Nature, to all appearance, has ſhut up every avenue to the north, ſhould paſs from the ſouthern parts of Aſia or Africa into America, thoſe continents being divided towards the ſouth by immenſe ſeas. From this circumſtance it is probable that the puma is not the lion, deriving its origin from thoſe of the old continent and ſince degenerated, but that he is an animal peculiar to America, like other animals found on the new continent.

When the Europeans firſt diſcovered America, the quadrupeds, birds, fiſhes, inſects, plants, and almoſt every thing appeared to be different from what they had ſeen before. Of this new world it was therefore neceſſary to denominate the principal objects. As the names given by the natives were for the moſt part barbarous, and difficult to pronounce or remember, names were borrowed from the European languages, eſpecially from the Spaniſh and Portugueſe. In this dearth of denominations, a ſmall affinity in external appearence, ſize, or figure, was ſufficient to attribute to unknown objects the names of thoſe that were familiar. This practice opened a field for doubt, perplexity,

plexity, and confuſion, ſince, at the ſame time, the productions of the new continent were receiving the denominations of thoſe of the old one, plants and animals peculiar to the latter were tranſporting there in abundance. To remove this obſcurity, and to avoid falling into perpetual errors, it is neceſſary to diſtinguiſh carefully what belongs to the one continent from what belongs to the other. Of this diſtinction I ſhall ſhew the neceſſity in the next article, where I ſhall enumerate not only the animals which are natives of America, but thoſe which have been carried thither.

M. de la Condamine, whoſe teſtimony deſerves our full confidence, ſays expreſsly, that he does not know whether the American animal which the Spaniards call Lion, and the natives of Quito, Puma, deſerves the name of Lion; he adds, that it is much ſmaller than the African lion, and that the male has no mane. Frezier alſo ſays, that the animals called lions in America are very different from thoſe of Africa; that they avoid the ſight of man, and commit no havock but among the cattle; and he farther remarks that their heads bear a ſtrong reſemblance to the heads of both the wolf and the tiger, and have tails ſhorter than that of either. In relations more recent, we are told that

that the lions of America by no means reſemble thoſe of Africa; that they have neither their ſize nor fierceneſs; that in colour they are neither red nor yellow, but grey; that they have no mane, and that they have a cuſtom of climbing up trees. Differing, then, from the lion in ſize, colour, form of the head, length of the tail, want of the mane, and laſtly, in natural habits, no longer ought the Puma of America to be confounded with the real lion of Africa or of Aſia.

Though this noble animal inhabits only the hotteſt regions, yet he will live, and, with care, might even breed in temperate ones. Geſner mentions that lions were brought forth in the menagerie of Florence; and Willoughby tells us, that at Naples, a lioneſs which had been confined with a lion, produced five whelps at one litter. Such examples are rare, but if true, they prove that lions are not abſolutely averſe to mild climates. At preſent there are none of them in the ſouthern parts of Europe; ſo early as the days of Homer, there were no lions in Peloponneſus, yet they exiſted in Thrace, Macedon, and Theſſaly, in the time of Ariſtotle. It is, therefore, evident that in all ages they have given the preference to the hotteſt climates; that they ſeldom reſided in temperate

temperate ones, and never in the frozen regions of the north. The naturaliſts above quoted, though they mention lions being brought for h in Florence and Naples, are ſilent as to the time of geſtation in the lioneſs, the ſize of the young, when whelped, and the degrees of their growth. Ælian ſays ſhe goes only two months, while Philoſtratus and Edward Wotten affirm it to be ſix. I think the latter opinion is neareſt the truth, becauſe the lion is an animal of great magnitude, and in general the time of geſtation is longer among the large than the ſmall ſpecies. Thus it is alſo with the growth of the body. Both ancients and moderns allow that the new-born lion is not bigger than the weaſel, that is from ſix to ſeven inches long; if ſo, ſeveral years muſt elapſe before he can increaſe to eight or nine feet. It is alſo ſaid that they cannot walk before they are two months old. But, without giving entire credit to theſe aſſertions, we may with probability preſume, from the largeneſs of his ſize, that he is three or four years in acquiring his full growth, and that he conſequently lives to about the age of twenty-five. The Sieur de St. Martin, maſter of the bull-fights at Paris, aſſures me that he has kept lions for fifteen or ſixteen years, and that he does not believe they live

live above the age of twenty or twenty-two. But it muſt be evident the want of exerciſe, conſtraint, and irkſomeneſs of ſituation to thoſe which are in confinement, muſt impair health and ſhorten life.

In two different parts of his treatiſe on animals, Ariſtotle ſtates that the lioneſs produces five or ſix whelps at her firſt litter, four or five at the ſecond, three or four at the third, two or three at the fourth, and one or two at the fifth, and after which ſhe becomes barren. This aſſertion is ungrounded, ſince in all animals the firſt and laſt litters are always the leaſt numerous. This philoſopher erred alſo, as well as all the naturaliſts who came after him, in maintaining that the lioneſs had but two nipples, it being a certain and well-known fact that ſhe has four. He likewiſe aſſerts the lion, bear, and fox, are unformed at their birth; but is is now known that theſe animals are brought forth as perfect as any other, and that their members are all diſtinct and developed. That the lions copulate in a backward poſition; but from a bare inſpection it is demonſtrable that he engenders in the ſame manner as other quadrupeds. I have noticed theſe errors in Ariſtotle, as the authority of ſuch a great man has miſled all the authors who have ſince given the hiſtory of

animals.

animals. His aſſertion alſo, that the neck of the lion contains but one rigid and inflexible bone, has been contradicted by experience; for in all quadrupeds, without exception, and even in man, the neck is compoſed of ſeven vertebræ; and it is alſo another certain fact, that in general carnivorous animals have a much ſhorter neck than granivorous, and eſpecially than the ruminating ones. It is alſo ſtated by Ariſtotle, that the bones of lions have neither cavity nor marrow; that they are as hard as flint, and poſſeſs the property of ſtriking fire by friction; but ſuch errors ought not to have been repeated by Kolbe, nor handed down to poſterity, ſince even in the days of Ariſtotle they were ridiculed by Epicurus.

The lion is at all times furious, is particularly ſo when incited by deſire. When in ſeaſon a female will have eight or ten males in her train, who fight moſt bloody battles, till one of them becomes victorious over the reſt. She brings forth in ſpring, and does not produce more than once a year, which alſo proves that ſhe is employed for ſome months in tending and ſuckling her young, and conſequently the time required for their firſt growth, while they are in need of the aſſiſtance of their dam, muſt at leaſt be ſome months. In this animal all the paſſions,

even of the moſt gentle kind, are in exceſs. The attachment of the lioneſs to her young is aſtoniſhingly great; though naturally leſs ſtrong and courageous than the lion, ſhe becomes terrible when ſhe has young. She then makes her incurſions without fear; attacks indiſcriminately men and animals, deſtroys without diſtinction, loads herſelf with the ſpoil, and carries it home to her whelps, whom ſhe accuſtoms betimes to blood and ſlaughter. She uſually brings forth in the moſt retired and inacceſſible places, and when afraid of having her retreat diſcovered, ſhe hides her tracks by traverſing back the ground, or bruſhing them out with her tail. She ſometimes alſo, when her apprehenſions are great, tranſports them to a different place, and if obſtructed, ſhe defends them with a determined fury, and fights to the laſt extremity.

It is aſſerted that the lion is not poſſeſſed of either the ſenſe of ſmelling or ſeeing in ſuch perfection as moſt other animals of prey; a ſtrong light incommodes him, ſo that he ſeldom goes abroad in the middle of the day, but commits all his ravages in the night; and when a fire is kindled near a herd, he never approaches them. His ſmell is alſo ſo faulty, that he hunts by the eye only. A ſpecies of

lynx

lynx, which has a piercing eye and acute ſmell, has indeed procured the name of the lion's guide, or provider, and it is ſaid that he always accompanies or precedes the lion, to direct him to his prey. This is a ſmall weak animal, and ſometimes follows the lion, but who would moſt probably avoid him, but that he frequently comes in for a ſhare of that ſpoil which the lion leaves.

The lion, when hungry, boldly attacks all animals that come in his way; but as he is very formidable, and they all ſeek to avoid him, he is often obliged to conceal himſelf for an opportunity of taking them by ſurpriſe. This he does by couching upon his belly in ſome thicket, where he patiently waits the approach of his prey, and which he ſprings at with ſuch force as often to ſeize it the firſt bound; but if in the end his prey eſcapes, he ſtands motionleſs, and ſeems hurt at the diſappointment. In the deſarts and foreſts gazelles and monkies are his common food; the latter, however, he only takes when upon the ground, as he cannot climb trees like the tiger or puma. He devours as much at once as will ſerve him for two or three days. His teeth are ſo ſtrong that he eaſily breaks the bones and ſwallows them with the fleſh. He is ſaid to be capable of ſupporting hunger for a long

time, but from the heat of his temperament he is very thirſty, and drinks as often as he can meet with water, which he laps like a dog, but with his tonge bent downwards. He requires about fifteen pounds of raw fleſh every day; he prefers that of living animals, particularly of thoſe he kills himſelf; he ſeldom devours putrid carcaſſes, and chooſes rather to hunt for freſh ſpoil than to return to what he had left on a former day. Though he uſually feeds upon freſh proviſions his breath is very offenſive, and his urine inſupportable.

The roaring of the lion is ſo loud, that when uttered in the night, and re-echoed by the mountains, it reſembles thunder. This roar is his natural note, for when enraged he has a ſhort and quickly re-iterated growl; but the roar is a long, deep, hollow cry, which he ſends forth five or ſix times a day, or oftener before rains. His cry of anger is much louder, and ſtill more terrible. He then beats his ſides and the earth with his tail, erects his mane, puts the ſkin of his face, muſcles, and eyebrows, in motion, ſhews his tremendous teeth, thruſts out his tongue, which is covered with ſharp hard points, and extends his deadly claws. He is much ſtronger in the head, jaws, and fore-legs, than in any of his hind parts. He ſees better in the night than day,

and

and though his ſleep is ſhort, and he is eaſily awakened, yet there is no foundation for the aſſertion that he ſleeps with his eyes open.

The uſual pace of the lion is bold, ſolemn, and ſlow, though always oblique. When in chaſe he rather bounds than runs, and his motions are ſo precipitate, that he cannot ſtop of a ſudden, but generally ſurpaſſes his intention. When he darts on his prey he leaps the diſtance of twelve or fifteen feet, ſeizes it with his fore-feet, tears it with his paws, and then devours it with his teeth. While young and active he lives by the chace, and ſeldom quits the deſarts or the foreſts, where he finds a ſufficiency of wild animals for his purpoſe; but when he grows old, heavy, and leſs qualified for exerciſe, he approaches frequented places, and becomes a more dangerous enemy to man and domeſtic animals. It is obſerved, however, that when he ſees men and animals together he attacks the latter, and never the former, unleſs he is ſtruck; in which caſe, always diſtinguiſhing from whom the blow came, he quits his prey to take revenge for the injury. He is ſaid to prefer the fleſh of the camel to that of any other animal; he is alſo exceedingly fond of young elephants, which, from their inability to reſiſt until their tuſks are grown, he eaſily diſpatches, when unprotected by

by their mothers, nor are there any animals able to reſiſt the lion but the elephant, rhinoceros, tiger, and hippopotamus.

However powerful this animal may be, it is not uncommon for large dogs, ſupported by men on horſeback, to chace, diſlodge, and force him to retire; but it is neceſſary for both dogs and horſes to have been well diſciplined, as animals tremble and fly at the very ſmell of the lion. Though his ſkin is firm and compact it is not proof againſt a ball, or even a javelin; yet he is ſeldom diſpatched with one blow. He is often taken like wolves, by ſlightly covering over a pit, and faſtening a live animal thereon. When thus entrapped all his fury ſubſides, and if advantage is taken of the firſt moments of his ſurpriſe and ſhame, he may be chained, muzzled, and conducted any where without reſiſtance.

The fleſh of the lion is of a ſtrong and diſagreeable flavour, yet the Negroes and Indians do not diſlike it, and frequently make it part of their food. The ſkin, formerly the tunic of heroes, ſerves theſe people for a mantle; they likewiſe preſerve the greaſe, which is of a penetrating quality, and is of ſome uſe in medicine.

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